The Aviation Historian®
The modern journal of classic aeroplanes and the history of flying

SEAGULL SWANSONG

amphibious adventures in australia

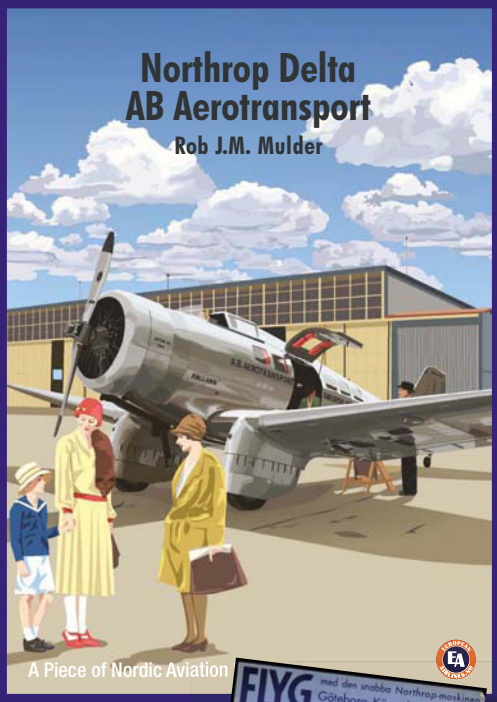
Issue 14

NEW BOOK:
Northrop Delta - AB Aerotransport
Rob J. M. Mulder

At the beginning of the 1930s, night mail services started to become more and more important for European airlines. Navigation and safety equipment had improved drastically and aircraft became much more economical to fly. The introduction of the fast Lockheed Orion by Swissair in April 1932 led to a true revolution within air transport. Everyone wanted aircraft that flew faster than their existing obsolete Fokker or Junkers aircraft did.

In Sweden, AB Aerotransport's Managing Director, Carl Florman, became interested in faster airliners as well. In 1933 he saw, during a visit to Norway, a Northrop Gamma and was interested in a similar aircraft for his airline. Offers were requested and through Northrop's representative, Norwegian aviator Bernt Balchen, AB Aerotransport ordered a passenger Delta 1C and a mail aircraft, the Delta 1E.

The operation of both aircraft was marked by problems and challenges for the pilots. It took them some time to master the aircraft. The Delta 1E never entered service, as it crashed on a trial mail flight. In 1937 AB Aerotransport sold the Delta 1C to Spanish airline Líneas Aéreas Postales Españolas — LAPE. It was in civil and military service until well after World War Two.



Following intensive research, the author describes in detail the history of the Northrop Alpha, Beta, Gamma and Delta (civil and military), as well as the operation of the two aircraft in service with AB Aerotransport, illustrated with many photographs, tables, drawings and colour artwork by Juanita Franzi, Mats Averkvist and Nils Mathisrud.

About the book: 21.5cm x 30.2cm, 176 pages, hard covers, 187 b/w photos, many tables, colour section with profiles. ISBN 978-82-93450-00-9

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Editor's Letter

FIRST, A VERY happy new year to all! I hope you had a splendid festive season and are ready for another year of deeply-researched, high-quality aviation history from *TAH*.

Launching us very much in the right direction in this issue is Professor Keith Hayward's revealing study of the political aftershocks of the Conservative Government's controversial cancellation of the ambitious V.1000 jet transport in 1955. I was quick to bite Keith's arm off when he offered another of his in-depth features based on The National Archives' official records, which throw a penetrating light into the darker corners of Whitehall's corridors of power at a time when political rust was already forming beneath the aluminium glare of the era's "white heat of technology". I learned a lot; I hope you do too.

On the subject of cutting-edge technology, the first part of Philip Jarrett's masterful comparison of the contemporaneous efforts of two of the most important pioneers in British aviation — Samuel Cody and A.V. Roe — offers a fascinating insight into the motivations and shortcomings of these two astronauts of yesteryear. Both were aiming for the stars, each using very different approaches. Roe, the methodical engineer, was convinced his two-axis system was right; his contribution, however, would lie along a different path to that of the care-free — and often careless — Cody, the adventurous entertainer who got there first but, perhaps unsurprisingly, paid the ultimate price not long afterwards.

Before we head into the action, a quick reminder about our spectacular 2016 ten-day reader holiday to Moscow in May, in association with Ian Allan Aviation Tours. For full details of this specially curated exploration of Russian aviation and space history, see page 11!

FRONT COVER ***Equally at home on land, sea or air, Supermarine Seagull VH-ALB bobs serenely in the lagoon at a resort on the Victoria/New South Wales border circa 1960.*** TONY WHITER

BACK COVER ***Engineers work on the Vickers V.1000 during its assembly at Wisley in the mid-1950s.*** BROOKLANDS MUSEUM

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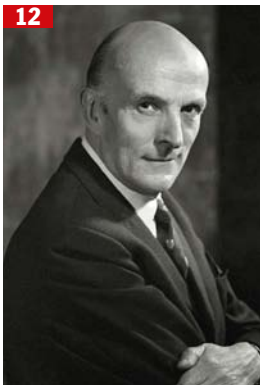
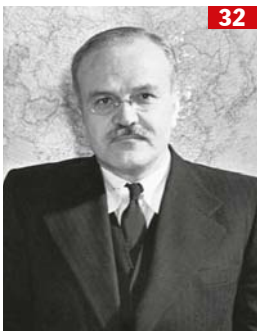




AIR CORRESPONDENCE

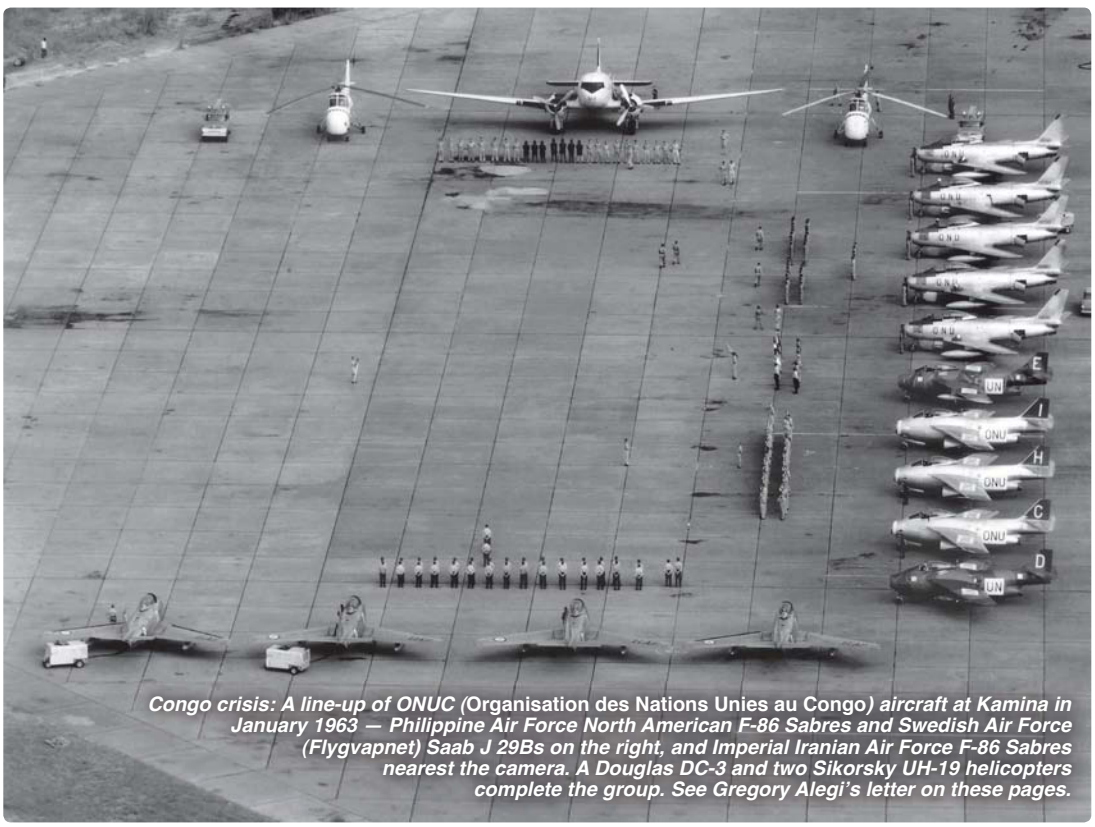
Letters to the Editor

Congo: an Italian perspective

SIR — I read with great interest Leif Hellström's account of Swedish Saab 29 Tunnan operations in the Congo *(To Africa in a Barrel, TAH13)*, which dovetailed with the long Italian Fairchild C-119 Flying Boxcar presence in that troubled country.

A second, shorter involvement occurred in January—February 1963, when the Italian Air Force was asked to deliver to the Philippine Air Force the North American F-86E(M) Sabre fighters mentioned on page 35. The five aircraft were Canadair-built CL-13s originally delivered to the RAF and made available to Italy following their replacement with Hawker Hunters. The aircraft, drawn from the *4ª Aerobrigata* (4th Wing), were stripped of all national insignia and marked ONU. The three known identities comprise the former RCAF 19542 (XB639 in RAF service), 19695 (XB857) and 19784 (XB896).

Flown by Capts Marcello Piras (leader), Franco Pugliese, Carlo Sabbatini, Pasquale Graziano and *Maresciallo* Giancarlo Bonollo, the five Sabres departed Grosseto on January 7, 1963. They were preceded by two C-119Gs (using callsigns I-6008 and I-6020), which carried groundcrew and spares but also scouted the 5,600-mile (9,000km) route that staged through Valencia, Ben Guerir, Las Palmas, Port Etienne, Dakar, Konakry,



Congo crisis: A line-up of ONUC (*Organisation des Nations Unies au Congo*) aircraft at Kamina in January 1963 — Philippine Air Force North American F-86 Sabres and Swedish Air Force (Flygvapnet) Saab J 29Bs on the right, and Imperial Iranian Air Force F-86 Sabres nearest the camera. A Douglas DC-3 and two Sikorsky UH-19 helicopters complete the group. See Gregory Alegi's letter on these pages.

VIA LEIF HELLSTROM

YF-12A, not A-12. And certainly not SR-71. See John MacMaster's letter on this page.

TAH ARCHIVE

Robertsfield, Abidjan, Lagos and Douala. Slowed by weather and glitches, the fighters reached Leopoldville only on January 28.

The Italians instructed the Philippine crews about key differences between the F-86E(M) and the F-86F they had previously operated and returned to Grosseto between February 2 and 6, courtesy of the Flying Boxcars. A few days later, the 4ª Aerobrigata received its first Lockheed F-104G . On March 3 Capt Sabbatini joined the Frecce Tricolori national aerobatic team for its inaugural season. Bonollo followed in 1966, serving until 1974. Graziano later headed the Air Force Academy (1984–87), and Pugliese became Director-General of Civil Aviation (1991–98). Sabre 19542 was initially preserved at Kinshasa University but was reported as badly vandalised by 2008.

Gregory Alegi *Rome, Italy*

Mind your Ys and Fs. And As

SIR — Thank you for *TAH12*, received safely; the usual wide selection of interesting stories.

However, being an incurable pedant with some interest in aircraft recognition, I must mention that the aircraft illustrated on page 79 is a YF-12A, not an A-12.

John MacMaster *Westcliff-on-Sea, Essex*

[Quite right, of course; we must take more water with it when captioning. The Lockheed YF-12 was a two-seat USAF version of the CIA's A-12 using the seventh, eighth and ninth A-12 airframes on the production line — Ed]

Put the Nighthawk query to bed?

SIR — Please allow me to muddy the water further with regard to the debate concerning the correct naming of Supermarine's quadruplane anti-Zeppelin aircraft (Mike Goodall's article *Pemberton Billing and the Four-Winged Farrago, TAH8,* and letter in *Air Correspondence, TAH11*).

I have had the opportunity to review some of the original blueprints for this aircraft held in the RAF Museum archive, which number more than 160. From the earliest, in May 1916, through to the latest, in early 1917, the drawings are titled simply "Supermarine Quadruplane"; no Nighthawk, Night Hawk or NightHawk, and indeed no P.B.31E either. The drawings carry both Pemberton Billing Ltd and Supermarine Aviation Works labels and refer to the machine as number 1389, although the sole aircraft completed was registered 1388.

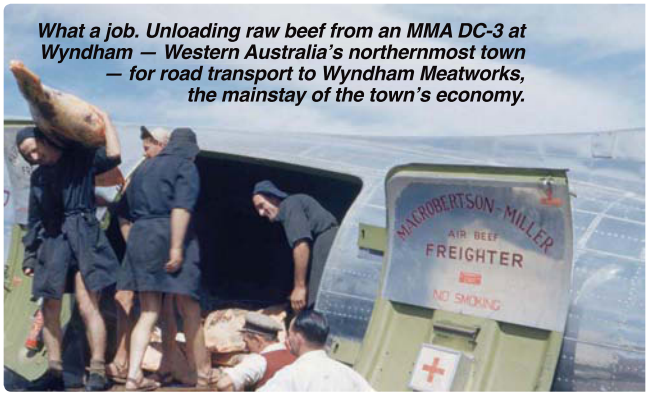
As Mike Goodall points out, Billing refers to it as the Nighthawk in his 1940 book *Defence Against the Night Bomber*. In the same year *Flight* magazine's company review includes a picture in which it is unnamed; but by 1953, in the article *Sires of the Spitfire,* the name Night Hawk appears. Renowned aviation historian J.M. Bruce, in a letter to the magazine, repeats this and in his 1960s works on World War One aircraft notes that ". . . at some time the aircraft was grandiosely but unofficially given the name Night Hawk". Andrews and Morgan's odd choice of NightHawk comes much later.

From this I suggest that the aircraft was never allocated an official name by Supermarine, and Billing's reference to it as the Nighthawk is simply part of his tendency to embellish his past. However, if it needs a name, then — as Mike Goodall says — as the originator of the concept, Billing's choice is better than the alternatives, which appear to lack any provenance.

Ralph Pegram *Fleet, Hampshire*

PS I have just discovered that in the *Modern British Aeroplanes* supplement in *The Aeroplane* for October 15, 1919, the Supermarine quadruplane is referred to as the Night Hawk. Back to square one . . .

Our feature in *TAH11* on Australia's meat-freighting operations in 1946–62 prompted offers of additional photographs — such as the rare colour images by **COLIN HAYES** on these pages — plus first-hand recollections (below) from MacRobertson-Miller Aviation's (MMA) **RAY WEBSTER**

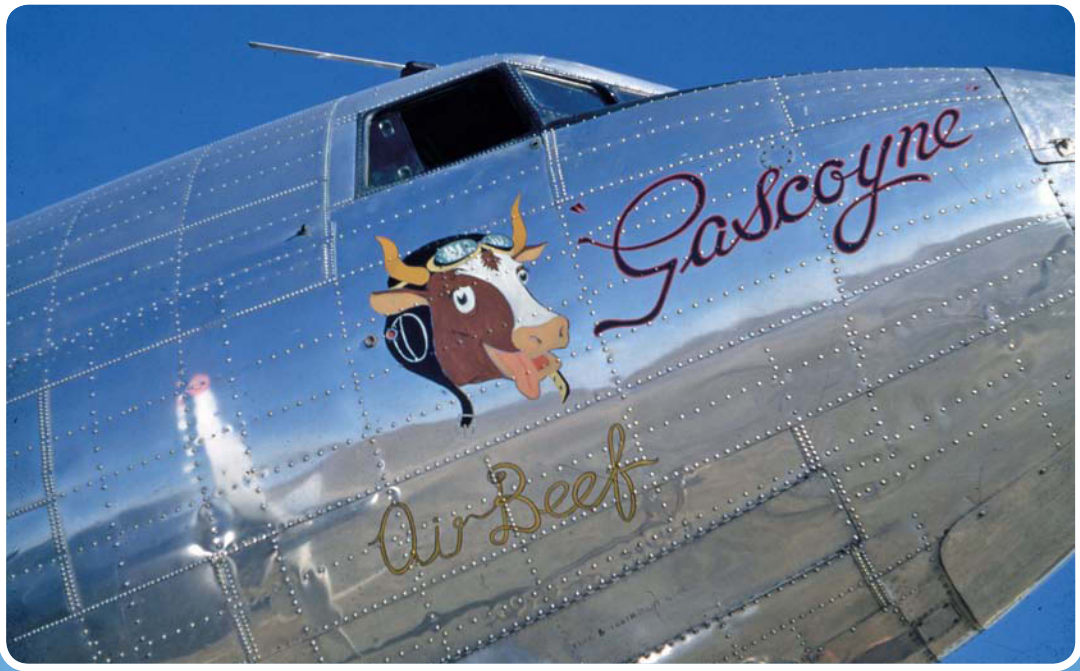


What a job. Unloading raw beef from an MMA DC-3 at Wyndham — Western Australia's northernmost town — for road transport to Wyndham Meatworks, the mainstay of the town's economy.

AIR BEEF postscript

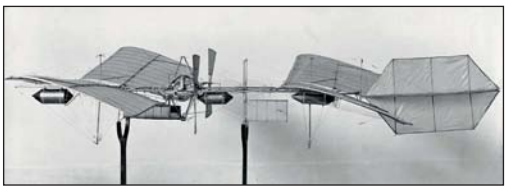
"THIS OPERATION was during my five years with MMA, operated with DC-3 VH-MML *RMA Lyndon*. The then dedicated freighter of MMA, VH-MML was the lightest DC-3 in Australia. When operating on the regular freight flights on the West Coast it would leave Perth for Geraldton with 197gal of fuel and have an available payload of 10,200lb. This was achieved by Lloyd Butcher, who legally and successfully lightened this aircraft. When the Air Beef season was to start, 'MML left Perth carrying all its spare parts, including an engine and a full propeller. To fit the prop inside the aircraft two windows were taken out, one on each side of the fuselage, and the tips of the blades projected outside the aircraft. This same DC-3 was chartered by the Western Australia Lands Department of the state government for aerial photography over the desert area near the South Australia border. Oxygen masks were provided for the crew and the climb-out was begun upon leaving Perth. It was fitted with oversize and broad-bladed propellers for use in the rarefied air. I despatched some of these flights from Perth when I was senior despatch officer for MMA at Perth Airport."

BELOW ***The monorail gantry for loading beef from the chiller room at Air Beef Pty Ltd's abattoir and base at Glenroy, Kimberley.***
RIGHT ***Changing plugs at Glenroy in 1954. Colin Hayes's note on the original slide says, "We lost a motor on take-off with three tons of beef aboard, and only just made it back".***



ABOVE ***Inspired perhaps by the logo of the processed-cheese brand The Laughing Cow, this benevolent-bull-in-helmet-and-goggles emblem adorned MMA's Douglas DC-3 VH-MML*** **RMA Gascoyne** ***(later*** **RMA Lyndon*****) — but not, apparently, for long. Fred Niven, who kindly forwarded Ray Webster's recollections to*** **TAH***, writes, "Prior to [VH-MML] entering Air Beef service, an Air Beef characterisation of a bull's head, the words 'Air Beef' and the name*** **Gascoyne** ***were painted on its nose by Ray Clapham, but only remained there long enough for photos to be taken. It never operated with the logo on the nose. Its name was later changed to*** **RMA Lyndon** ***to bring it into line with the company's policy of aligning aircraft names with the last letter of their registrations."***

BELOW ***Pristine DC-3 VH-MML, newly delivered and still wearing its bull logo and the name*** **Gascoyne***, taxies in for refuelling at Wyndham in 1954. Built by Douglas at Oklahoma City in March 1945 as a C-47B-30-DK, with USAAF serial 44-76613, it was immediately passed to the RAF as a Dakota IV, KN470, and saw service in Egypt, India and Burma. Following its career with MMA it passed through many further ownerships, before being re-registered as VH-BPN in 1977. It was still operating, on pleasure-flying duties, in the early-to-mid 2000s, and is believed to survive in storage in New South Wales.***



PHILIP JARRETT COLLECTION x 3

TOP LEFT ***Samuel Pierpoint Langley's model of his Aerodrome, which he simply scaled up in order to create the full-size aircraft, seen*** **LEFT** ***atop its houseboat "carrier" on the Potomac river in 1903.*** **ABOVE** ***The moment of launch — note the forward wings tucking-under.***

Poetry please

SIR — Ken Marshall and I are members of the 578 Squadron Association and it is our intention to compile a book of Bomber Command poetry penned by Bomber Command members. All proceeds will go to the upkeep of the Bomber Command Memorial and the International Bomber Command Centre.

So, through *The Aviation Historian,* please could we make the request for fellow readers to search their archives and let either of us have copies of any poems that their fathers/uncles/grandfathers or associated crew members may have penned (be they aircrew or groundcrew), for us to publish?

Steve Allen
The Country Cottage, Punchbowl Lane, Brothertoft, Boston, Lincs PE20 3SB; tel 01205 280199; mob 07766 733113; e-mail mrandmrs.allen@btinternet.com

Looking back at Langley

SIR — I really enjoyed Nick Engler's PDF interactive drawings of the Langley Aerodrome *(Politically Incorrect, TAH11)*. Facilities like this definitely give added value to the Journal.

The Smithsonian deception was pervasive. As a boy I read the aviation sections of my mother's 1930s copies of Arthur Mee's *The Children's Encyclopædia,* and I am sure that it said that the reconstructed Aerodrome "flew like a bird!".

It's a good thing it didn't, as Manly would have been in dire peril. It is true that Langley's model aerodromes had flown well; one flew for 5,000ft. But Langley appears to have merely scaled up the model to the real thing rather than doing any stress calculations. In the photo of it dropping into the river after launch, the "fuselage" is clearly bending, and the forward leading edges are flexing downward. And there was no means of control other than the two trim-wheels. If it had come down over land, Manly would have had no means of making a safe descent. Hopefully he realised this and would have cut the ignition while still over water.

And the controversy over who flew first would continue. The Wright brothers made the first controlled, sustained and powered flight in a heavier than air aircraft. If Langley had flown, he would have missed out the "control" part. The Smithsonian would still have declared victory, so historians and patents offices would still be arguing about who really made the first flight.

Adrian Roberts *West Wickham, Kent*

TAH is F.A.B.

SIR — What a good issue *TAH13* is, a wonderful mix of articles: from the old to the new, jet and propellers, bravery, humility, ingenuity, foresight, strategy, jumping tanks and jumping members of the House of Lords. To quote Mr Jeff Tracy, big boss at International Rescue, while attending the 2026 London International Airshow in the company of Lady Penelope Creighton-Ward: "Jolly good show, you chaps, jolly good show".

Ray Micallef *Rabat, Malta GC*

PS I am still waiting for the recipe to that Japanese orange-peel fuel ***[coming soon! Ed]***. Who knows — it might help VW.

Join us on our 2016 Reader Holiday . . .

★ Extra visits added, plus boat charter ★

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- ★ Ilyushin Design Bureau
- ★ Central Armed Forces Museum
- ★ City tour inc Red Square, Kremlin, Armoury
- ★ Chernoe Aircraft Repair Plant
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A Mil Mi-26 and two Mil Mi-8s over Red Square, St Basil's Cathedral and the Kremlin at the time of the 2015 Victory Day parade.

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THE BLAME GAME

VICKERS V.1000: THE ULTIMATE POLITICAL FOOTBALL?

When British Minister of Supply Reginald Maudling concluded in 1955 that "we have no alternative but to allow the V.1000 to die", all parties involved acted swiftly to shift their share of the responsibility. **PROFESSOR KEITH HAYWARD FRAeS** examines the political fallout from the cancellation of Britain's great white hope — or hopeless white elephant?

BROOKLANDS MUSEUM

THE DECISION IN 1955 to cancel the Vickers V.1000 military transport and its civil derivative, the VC7 airliner, has long been viewed as a turning-point in the history of Britain's post-1945 aerospace industrial development. This is debatable, but it was certainly an early test of the new Conservative Government's determination to end Labour's "Brabazon" programme of directly-funded civil aircraft.[1]* The new approach would rely on a combination of private investment on the part of industry and a launch market provided by the nationalised airlines — the British Overseas Airways Corporation (BOAC) and British European Airways (BEA). So much the better if a military contract could cover the basic development costs. (Although this may have been the declared policy, the Ministry of Supply was still prepared to fund the prototype for BEA's first pure-jet airliner in 1956.)

NEW ERA, NEW AIRCRAFT

A Ministry of Supply (MoS) specification for a fast long-range military transport to support overseas deployment of the V-Force was issued on May 19, 1951 (the day after the first flight of the Vickers Valiant), with an in-service date of 1956. The aircraft should be based on an existing design and, for reasons of economy, developed concurrently for commercial operations.

Several companies came up with proposals, including Vickers, Handley Page and Avro, which offered versions of their V-bomber designs; the Valiant, Victor and Vulcan respectively. A larger version of the Comet was also proposed by de Havilland.[2] While there were questions about the workload at Vickers, which included the build-up of Viscount turboprop airliner production, its Type 716 Valiant-based low-wing proposal offered the best balance of commercial and military features. Vickers was also felt to have the best chance of meeting the summer/autumn 1954 first-flight target.[3]

As BOAC's future equipment plans were in flux, the Corporation was involved in discussions as an "interested party" but would only "go for it if it was both technically and commercially a gilt-edged proposition".[4] Nevertheless, both the MoS and the Air Ministry were very keen to go ahead with the Vickers prototype solely on the basis of the military requirement. A prompt decision would also help Vickers, which, according to the Air Ministry, was "rapidly running out of work in [its] project office"[5], a point raised by Vickers-Armstrongs Managing Director George Edwards in a brief to the company's Design Policy Committee: "It [is] most important that immediate provision be made for the further development of the Viscount and the early production of a civil derivative of the Valiant".[6]

An initial specification was therefore issued in May 1952 detailing the use of Rolls-Royce Avon engines. The Air Ministry requested £12 million (£292 million today)[7] to fund the first 12 aircraft. In response, the Treasury preferred to await final decisions on a wider review of defence policy that was pending before proceeding to full production of the Vickers design. In the Treasury's view it seemed "rather optimistic to suppose that the Air Ministry will ever be able to finance a worthwhile force of these extremely expensive machines". It also noted that the cost could imply cuts to other aircraft and guided-weapons programmes. Furthermore, the Treasury stated that it would like to see further progress by the manufacturers "before placing an order which would mortgage so high a proportion of available resources in 1956–57 and presumably subsequent years".[8]

In May 1954 the Air Ministry reiterated its commitment to the Vickers design, which had evolved and been given a new designation — V.1000. The need for a fast transport had not diminished; indeed, an adequate long-range force offering short-notice air mobility was now even more important. The V.1000 was "the only aircraft in sight that would meet the strategic need for a transport aircraft to match the performance of the V-bombers".

In the face of economic stringency, however, the Air Ministry was prepared to cut its order to eight as a "rock-bottom" initial requirement, and six would be enough to get production going.[9] Rather ominously, BOAC remained lukewarm. Although the airline would be "disappointed if the development were abandoned", the V.1000 really only represented a "valuable insurance from the Corporation's point of view". For its part, the Air Ministry stated that it might find it hard to support the V.1000 if there was no civil user, and might have to rely on the Bristol Britannia for fast transport requirements "despite its relative strategic inferiority for the task".[10]

By the end of September 1954 the Air Ministry's

** ENDNOTE references, indicated by numbers at appropriate points in the text, are provided at the end of the feature.*

OPPOSITE PAGE, TOP ***Three of the figures who played a major part in the V.1000/VC7 controversy. Left to right: Vickers' Managing Director George Edwards; William Sidney, Lord De L'Isle and Dudley, Secretary of State for Air, 1951–55; Reginald Maudling, Minister of Supply, 1955–57.*** **BOTTOM** ***The sole V.1000 under construction at Wisley.***

TAH ARCHIVE

ABOVE ***The second prototype Vickers Valiant, WB215, photographed by Charles E. Brown soon after its first flight in April 1952. Vickers' Type 716 proposal for a jet-powered replacement for the Handley Page Hastings was to use the wings, tail unit and undercarriage of the Valiant, fitted to a new fuselage capable of carrying at least 90 troops.***

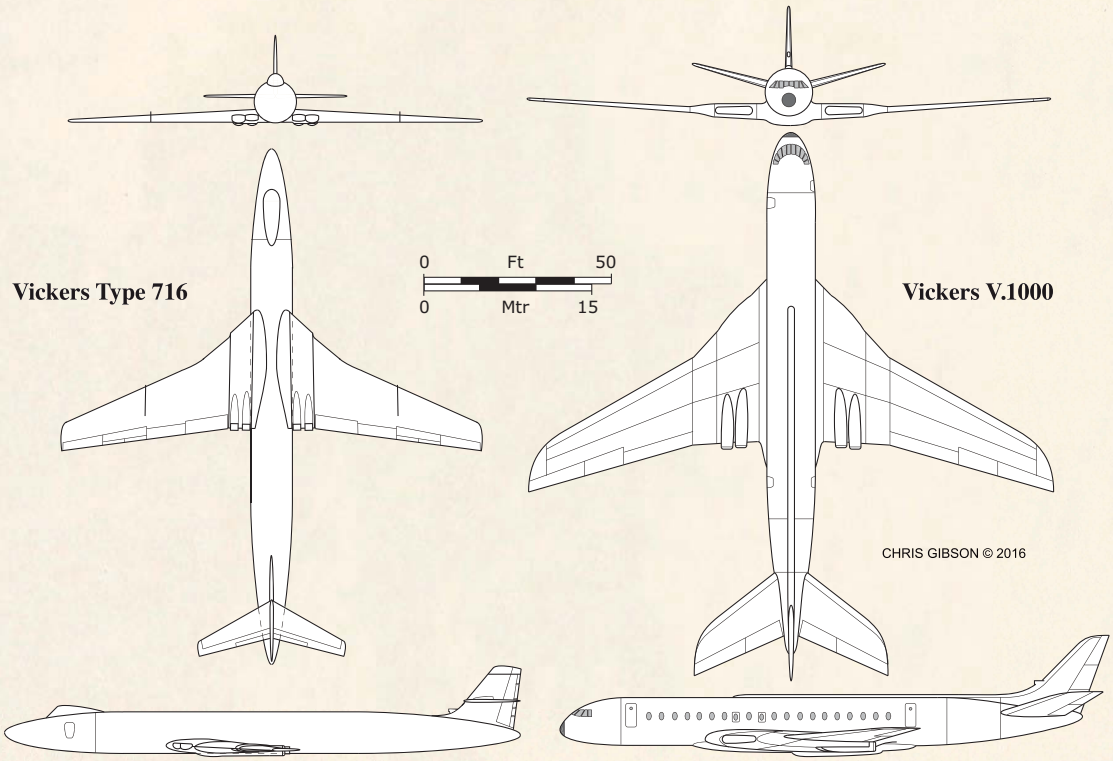
confidence in the project was being increasingly shaken by persistent problems affecting V.1000 development. Its design weight was now outgrowing the thrust available from the Avon engines initially selected. This was almost entirely due to the need for an aircraft capable of flying civil routes across the North Atlantic. By January 1955 discussions with Vickers were providing little confidence that there would be an easy solution and the in-service date had now slipped to early 1960. Six months later, a full programme review revealed that the aircraft would still not meet its payload and take-off requirements.[11]

THE WHITE ELEPHANT IN THE ROOM

All was not well at Vickers either. Air Ministry inspectors felt that the former's design organisation was "not what it used to be".[12] Priorities were assigned by the Chief Draughtsman and the designers of the various aircraft under development, a situation that tended to result in a continuous state of argument and counter-argument. The absence of George Edwards, who had been promoted out of the design office, may not have helped, but "the organisation never really worked with clockwork precision during [Edwards'] reign as Chief Designer, but his personality and perception were such that difficulties were surmounted relatively easily and adjustments made in time to prevent chaos or confusion".

Vickers also faced problems associated with Valiant and Viscount production. Staff members at Weybridge who had been allocated to V.1000 development at the company's experimental plant at Foxwarren and assembly plant at Wisley, were under pressure from work on the Viscount.[13] It was evident that the revised March 1955 target for the first flight of the V.1000 would not be met unless urgent action was taken. In short, the firm's commercial success with the Viscount "has had an adverse effect on the military transport and the delay cannot now be retrieved".[14]

By this time BOAC's previously lukewarm interest had evaporated entirely. The V.1000 lacked "sufficient economic advantage over types now on order to justify the placing of a production contract".[15] With BOAC declaring that it had no interest in the V.1000, and in the absence of any other confirmed airline customer, the type was now a very expensive option for the RAF, then beset by threats to other front-line programmes.[16] Much of the strategic and tactical rationale for a dedicated fast long-range transport had also vanished, and in July 1955 the Air Council decided on the type's military cancellation.[17]



ABOVE LEFT ***A provisional drawing by CHRIS GIBSON of an initial Valiant-based low-wing study for Vickers' Type 716, based on documents in The National Archives. By the end of 1952 the firm had dispensed with the Valiant elements and was working on the V.1000, the military version of which, with dorsal spine, is seen*** **ABOVE RIGHT.**

The Chancellor of the Exchequer, R.A. "Rab" Butler, had no doubts that the correct decision had been made. Writing to the Air Minister he said, "I am sure that you have reached the right conclusion and that the V.1000 should be allowed to die".[18] Reginald Maudling, as Minister of Supply, came to the same conclusion: "We are thus clearly in a dilemma. Without the V.1000 we have nothing to offer [as a new jet transport]", but to go ahead "there is a real danger that we would have a white elephant on our hands. The conclusion I reach from all of this is that we have no alternative but to allow the V.1000 to die".[19] Total airframe costs were put at £7 million, with costs for 12 production aircraft estimated to be £22 million (£526 million). Cancellation would save some £18 million (£430 million).[20]

A QUESTION OF PRESENTATION

The question now was how exactly to announce the decision? The Government had already faced a turbulent period over its record for developing combat aircraft and another embarrassment would be difficult to present.[21] This was a matter that would affect both the Air Ministry, as customer and originator of the requirement, and the MoS, which had been responsible for developing and procuring the aircraft. The latter also had a wider responsibility for the health of the British aircraft industry.

In July 1955 Lord De L'Isle and Dudley of the Air Ministry and Reginald Maudling from the MoS met to discuss tactics. They agreed that both ministries had to have the same story. "It is important to recognise that it is the failure of the firm to produce an aircraft to meet the Specification which has caused the cancellation, and not any changes in the Specification as it was first drawn up". It was also important to express failure in "such a way that it did not cast too much doubt on the ability of the British aircraft industry, particularly in the light of recent American developments in the transport field".[22]

Nevertheless, the decision triggered a spat between the two ministers. In a note circulated to fellow members of the cabinet, Maudling stated that while the Air Ministry had decided that it did not want the six aircraft it had ordered because Vickers had failed to meet its requirement, he also felt the Air Ministry was to blame for changing its requirement.[23] The Air Ministry was quick to challenge this view of the situation; Vickers had clearly failed to deliver on the contract, especially in terms of curbing weight growth, which had reached, or was approaching, 30 per cent more than originally estimated. "This was", the Air

BROOKLANDS MUSEUM

ABOVE ***The sole V.1000 prototype, allocated RAF serial XD662, being built at the Vickers factory at Wisley. Most of the components were fabricated at the company's experimental site at Foxwarren, between Weybridge and Wisley, then transported to Wisley for final assembly. The fin was built as an integral part of the fuselage rear section.***

Ministry argued, "the primary and fundamental reason why the Air Ministry has asked the MoS not to proceed with the prototype or with the [military] order".

In order to justify accepting what for so long had been described as a vastly inferior alternative, the Air Ministry felt that as strategic needs had been "relaxed somewhat", the Britannia would indeed now be able to meet future long-range transport requirements. "But again this was only a mitigation of the unfortunate consequences which flowed from the failure of Vickers to meet the Specification".[24]

To strengthen its own version of events, the Air Ministry assembled a detailed history of the V.1000 programme. The result had a salutary effect on the Air Ministry's position. According to one senior RAF officer, there were two separate aspects to the cancellation: the in-service date and the aircraft's performance. In respect of the delay, Vickers had to take some of the blame. It had underestimated the difficulties in completing the project; but the MoS had also been too quick in accepting the firm's estimate. There was certainly a degree of over-confidence that a Valiant-based design would be a simple conversion job; in May 1952 Vickers had admitted that the new machine was "virtually a new aircraft from the design aspect".[25]

In October 1955 a report by Air Chief Marshal Sir John Baker (**INSET, BELOW LEFT**), Controller of Aircraft, MoS, stated that the V.1000 military procurement process had not followed standard procedures, with a very short (five-month) design submission period. Furthermore, OR.315 (the January 1952 Operational Requirement from which the military Specification, C.132D, had been issued on December 8 that year) had been drafted around a second Vickers design, the V.1000. Baker concluded that had a more detailed OR been drafted, Vickers may have developed a "more refined" design that more closely matched the requirements sooner. Similar errors had been at the root of the problems that dogged the Supermarine Swift, also a Vickers-Armstrongs product.

The official history written by a member of the Air Staff duly criticised Vickers: "This is the second time that Vickers [has] let us down within 12 months, and the firm ought to be left in no doubt as to the Air Ministry's opinion". However, as James Jackson notes in his study of the V.1000's OR formulation, this was "rather unfair given that both aircraft had been selected without the benefit of proper Operational Requirements to guide their development".[26]

BROOKLANDS MUSEUM

ABOVE ***The flightdeck of the prototype at Wisley during construction. Crew accommodation for the military V.1000 included positions for five crew, comprising two pilots, a flight engineer, a navigator and a signaller. The 140ft (42·67m) span of the V.1000 was considerably greater than the 114ft 4in (34·83m) span of its original forerunner, the Valiant.***

On the other hand, the cause of the type's prospective performance failure was to some extent a matter for debate. Vickers contended that it could have met the military specification had it ignored the civil requirement, and if it could have counted on the availability of a more powerful engine, namely the Rolls-Royce Conway. In practice the V.1000 may not have failed to meet its performance requirements, but as Sir John Baker remarked, "as a whole the aeroplane is marginal as regards meeting the Specification, and it is late". But the MoS could not claim unreservedly that Vickers' failure to meet the demands of the Specification was the sole cause of cancellation; if this was to be the official reason, the firm would "react violently and publicly".[27]

After some reflection it was agreed that Vickers would be in a strong position to place the blame on officialdom for some of the critical failings in the procurement process. It was also agreed that the public announcement should refer only to the time slippage, as "this line could not be disputed by the firm and it should carry conviction to the general public".[28]

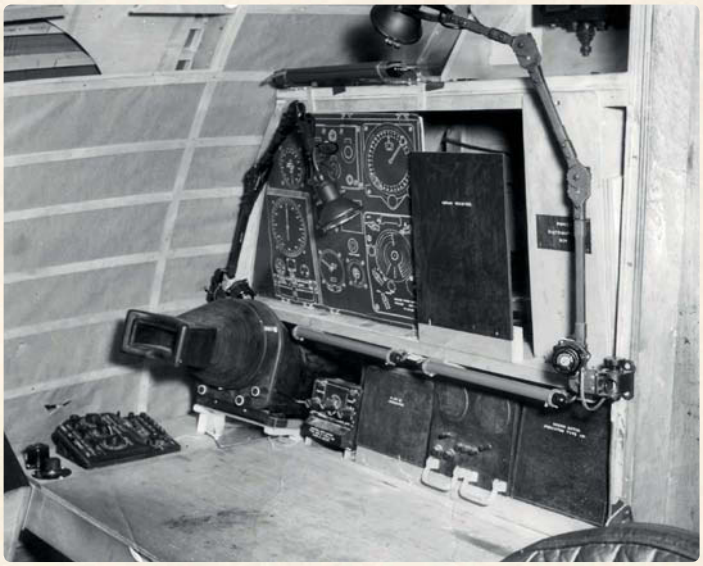
From the perspective of the MoS, if the V.1000 was to go ahead, it must now be purely on its merits as a civil aircraft. As the VC7, it could be in service earlier than, but with inferior performance to, American types then in development. Further modifications were possible, but the MoS decided

"Vickers can't fund it; BOAC doesn't want it and no other airline is likely to risk an untried aircraft . . ."

— Reginald Maudling, Minister of Supply, October 1955

"that the chance of success would be small, and the time needed for the entire work would mean the loss of any advantage of early delivery". As Maudling put it, "Vickers can't fund it; BOAC doesn't want it and no other airline is likely to risk an untried aircraft".[29]

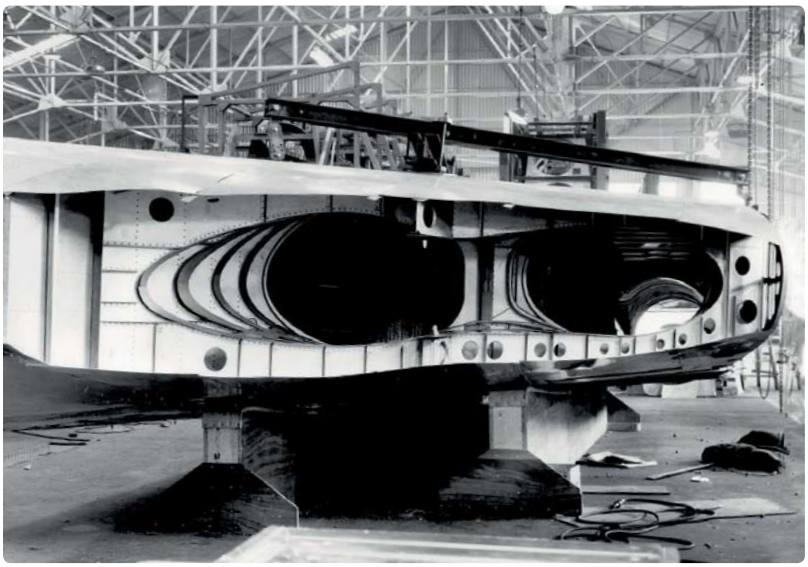
As a result the UK would temporarily have to concede leadership to the Americans. There were hopes that the quality of Rolls-Royce engines would deliver commercial gains; but as far as aircraft were concerned, the UK would need to show a clear technical advantage. The MoS would ask industry for a series of design studies for a fast transatlantic jet to be available around 1965, but suggested that it may be wiser to wait until "we can re-enter [the market] with a true supersonic aeroplane not before 1970".[30]



BROOKLANDS MUSEUM x 3

ABOVE LEFT ***The mock-up of the navigator's station, with instrumentation illustrations for positional purposes, in the V.1000 prototype at Wisley.*** **ABOVE RIGHT** ***The throttle quadrant and central control pedestal, incorporating the braking parachute-release switch (between throttles at top) and trim controls (beneath parachute switch).***

ABOVE ***Inside the V.1000 fuselage looking forward. The fuselage was 137ft 11in (42m) long with a diameter of 12ft 6in (3·8m), with a stringer-skin structure supported by light channel-section frames; Z-section stringers were fixed to the skin with countersunk rivets. The frames were attached to the stringers and not directly to the skin.***



BROOKLANDS MUSEUM

LEFT *The air intake apertures on the V.1000's port wing. The engines were to be buried in the wing roots but placed well out from the fuselage to reduce noise levels in the cabin and avoid jet-efflux effects on the rear fuselage. The inner wing sections were given a sweep of 38° 24′, with the outer sections having a sweep of 26° 23′.*

BELOW *In 1953 the Vickers design team began exploring a larger, improved Viscount, to become the Vanguard, which was developed entirely as a private venture. The type's extensive development became another burden on the already hard-pressed Vickers production team.*

Announcing his decision to cancel the V.1000 in the House of Commons in late November 1955, Maudling claimed that the lack of a long-range jet "would not seriously damage the British civil aircraft industry". Others expressed amazement that the Government was allowing BOAC to reject the V.1000 when airlines were beginning to order American jetliners in quantity. One Conservative backbencher, Paul Williams, called it "one of the most disgraceful, most disheartening and most unfortunate decisions that has been taken in relation to the British aircraft industry in recent years". It was confidently predicted that BOAC would soon be asking for government permission to buy an American aeroplane.[31]

TURNING TO AMERICA

Which is precisely what happened. Early in 1956, forced by the emerging competition from airlines ordering sleek, jet-powered Boeing 707s and Douglas DC-8s, BOAC was forced to reconsider its options. With the V.1000 terminated, and with no British alternative available in time, BOAC requested permission to buy 18 Boeing 707s at a cost of £44 million (£866 million). The Corporation would place the remainder of its jet airliner requirement — the "Empire route" specification — with a British manufacturer, which would lead ultimately to the Vickers VC10.[32]

At the time, the V.1000 cancellation and the consequent loss of the VC7 was seen by some as damaging to Britain's long-range airliner prospects. George Edwards would later describe it as "the most serious cancellation that had taken place in a whole string of cancellations . . . the biggest blunder of them all".[33] Journalist and author Derek Wood had no doubts either: "This decision marked the point at which British airliner development really began to go wrong, and there has never been a full recovery".[34]

Contemporary MoS evaluations were uncertain; the VC7 might have been reasonably placed to compete with the Boeing 707 and DC-8, but "if Boeing was allowed to have Conway engines [as the BOAC 707 order specified], the position would be different".[35]

TAH ARCHIVE

TAH ARCHIVE

ABOVE ***The silver lining? The VC7 had been conceived from the outset as a fast, economical airliner for BOAC's vital North Atlantic routes, a type finally delivered with the advent of the Super VC10 — the prototype of which, G-ASGA, made its maiden flight in May 1964, and which is seen here at Farnborough in September the same year.***

So, could the V.1000/VC7 have taken on the American jets? One authoritative 1968 study of the development of modern aircraft, *Technical Development of Modern Aviation,* by R. Millar and D. Sawers, describes its prospects as marginal. On balance, "the orders placed for the American jets before and after the V.1000 cancellation made this act seem an error of commercial judgment, but there is little reason to believe that the V.1000 would have been commercially competitive with the American [aircraft]". Had Vickers been convinced of its merits, it might have developed the type as a private venture, as it did the Vanguard from 1953. The VC7 was likely to be slower than either of the American jets, however. Had BOAC bought it instead of the 707, "the most likely outcome would have been that this airline would have found itself operating a less efficient aircraft than its competitors".[36]

In his 1989 book *Knights of the Air*, Peter King is also somewhat sceptical of the aircraft's prospects. He argues that despite the "apparent down-to-earth qualities of George Edwards", the bid to launch a long-range airliner on the back of RAF and BOAC orders was a "supreme example of [a] lack of realism". As the most expensive item on the RAF's wants-list of transport aircraft, the V.1000 was highly vulnerable to attack from the Treasury from the outset.[37]

A key factor in the type's success would have been the meeting of its challenging in-service date. On the basis of the initial development schedule, a first flight in 1956 would have given the VC7 a slight lead over the long-range 707 and DC-8. This would have depended on Vickers delivering the aircraft absolutely on schedule, which may have proved difficult given the problems at Vickers identified by MoS inspectors in 1954; added to which would have been the demands imposed by development and production of the Vanguard.

BUILT-IN OBSOLESCENCE?

Another important consideration was the question of lifetime costs, especially those of maintenance, given the difference between the American podded-engine designs and the V.1000, in which the engines were buried within the wing roots. At the time the Air Ministry felt that the British approach was superior, offering a "cleaner wing" and superior aerodynamic performance.[38]

Peter (later Sir Peter) Masefield of BEA begged to differ; studies had shown the V.1000 to be marginally inferior aerodynamically to the two American designs, and substantial work would have been needed to improve it, which would have put it well behind the competition. Moreover, airlines were already showing a preference for podded jet engines, and "the chances of commercial success for the V.1000 [are] so small that it would be better to stop development at once than to throw away more of our scarce resources upon an enterprise that would probably be a failure".[39]

The military potential of the V.1000 is equally hard to determine. Much of its initial value as a design concept was defined by what was still an uncertain strategic environment. Specialised jet transports for the strategic deployment of troops were soon found to be replaceable by

ENDNOTE REFERENCES

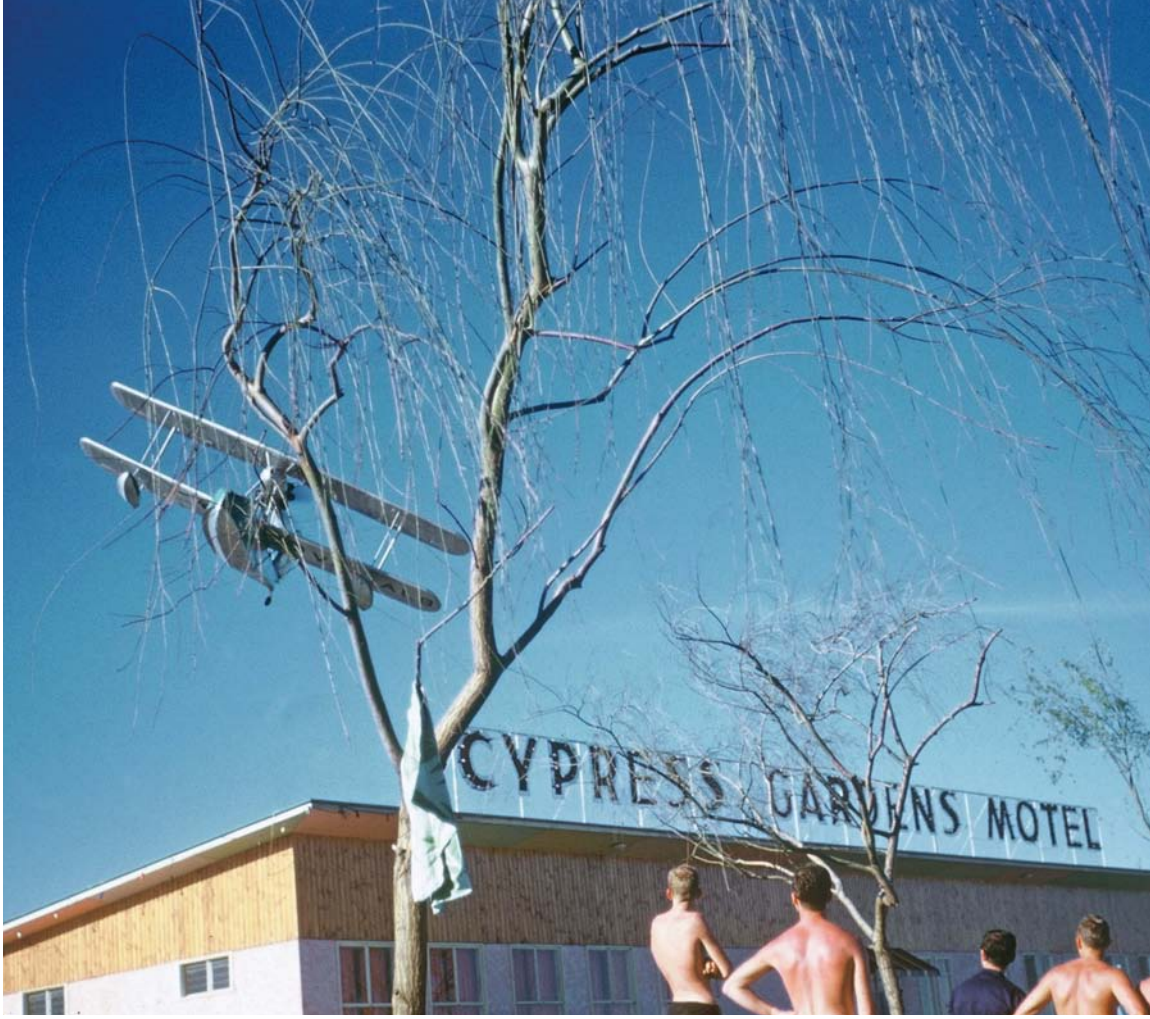
1 See especially Sir George Edwards quoted in *From Bouncing Bombs to Concorde: The Authorised Biography of Aviation Pioneer Sir George Edwards OM*, Robert Gardner, The History Press, 2006, Chapter 14; also *Project Cancelled*, Derek Wood, Macdonald & Jane's Publishers Ltd, 1975
2 See *The British Aircraft Industry*, Keith Hayward; Manchester University Press, 1989
3 For a detailed description and analysis of the official studies see *The Genesis of the Vickers V.1000*, James Jackson, *Air-Britain Aeromilitaria*, March 2015, pp40–43. It is worth noting that Short Bros also proposed a civil development of the Sperrin
4 Report of Ministry of Supply (civil) working party, November 1951; The National Archives (TNA) AVIA 65/306
5 *Speedbird: The Complete History of BOAC*, Robin Higham; I.B. Tauris, 2014, p134
6 Memorandum from Air Vice-Marshal G.W. Tuttle (Assistant Chief of the Air Staff), June 19, 1952; TNA AIR 20/7734. Also *The Vickers V.1000*, Derek King; *Aviation World*, Autumn 2005, pp111–112
7 The figures in parenthesis are 2016 values, and assume an average inflation rate of two per cent per annum. See *A History of the V.1000*, Air Ministry memorandum, July 16, 1953; TNA AIR 20/7734. Significantly, BOAC never at any time formally committed itself to the project, although it showed an interest throughout the type's development; See TNA AIR 2/13080
8 Treasury letter to the Air Ministry, July 31, 1953; TNA AIR 20/7734
9 ibid; memorandum from the Air Ministry to the Treasury, May 1, 1954
10 Minutes of the Transport Aircraft Requirements Committee, March 19, 1954; TNA AVIA 63/4
11 *A History of the V.1000*, Air Ministry memorandum, August 15, 1955; TNA AIR 20/7734
12 Report of Ministry of Supply factory inspection of Vickers at Weybridge on February 4, 1954; TNA AVIA 65/306, February 19, 1954
13 A young Vickers apprentice in the late 1950s was told that "the design team on the V.1000 was the second team; the first team was involved either with the Vanguard or with getting the Viscount into production"; e-mail correspondence with the author
14 TNA AVIA 65/306, op cit
15 Letter from Sir Miles Thomas, Chairman of BOAC, to the Chairman of the Transport Aircraft Requirements Committee, April 18, 1955; TNA AVIA 63/6. The Corporation was under political pressure to continue support for the Britannia, which was also encountering problems, in order to protect employment at Short Bros, a major Britannia subcontractor
16 Trans-Canada Airlines expressed interest in the V.1000 and George Edwards claimed that Vickers was close to landing an order when cancellation was announced, but this was not enough to save the VC7; Gardner, op cit, p120
17 *A History of the V.1000*; TNA AIR 20/7734, op cit
18 ibid; letter to the Air Minister from the Chancellor of the Exchequer, October 21, 1955
19 ibid; note by the Minister of Supply (Maudling), October 14, 1955
20 ibid; letter to the Chancellor of the Exchequer from the Air Minister, October 18, 1955
21 See *High Anxiety: The Supermarine Swift & Britain's First Post-war Procurement Crisis*, Keith Hayward; *The Aviation Historian*, Issue No 11, 2015, pp15–22
22 Notes of meeting between Air Minister and Minister of Supply on the V.1000, July 19, 1955; AIR 20/7734
23 ibid; note by the Minister of Supply (Maudling), October 14, 1955. There are fiercely applied pencil marks questioning this interpretation on the Air Ministry copy in The National Archives
24 ibid; letter to the Chancellor of the Exchequer from the Air Minister, October 18, 1955
25 ibid; letter from Sir Hew Kilner of Vickers, cited in a note from Air Chief Marshal Sir John Baker to Permanent Under Secretary, Air Ministry, October 15, 1955
26 Jackson, op cit
27 Note from Air Chief Marshal Sir John Baker to Permanent Under Secretary, Air Ministry, October 15,1955; TNA AIR 20/7734 and AIR 2/13080, passim
28 Note of meeting between Air Minister and Minister of Supply, October 21, 1955; TNA AIR 20/7734
29 ibid; note by Minister of Supply (Maudling), October 14, 1955
30 ibid. It should be noted that the RAE was beginning its study of supersonic transport around this time
31 Hansard, House of Commons Debate (HCD), November 28, 1955; Vol 546, cc1921–1924. Also Hansard, HCD, December 8, 1955; Vol 547, cc665–681
32 Hansard, HCD, November 28, 1956; Vol 558, cc1777–1781
33 Sir George Edwards quoted in Gardner, op cit, Chapter 14
34 Derek Wood, op cit. BOAC is often seen as a villain in this saga, with an emerging preference for American aircraft, but in 1955 alone it spent some £85 million (£1·7 billion) on orders for British aircraft. Higham, op cit, pp135–143
35 Air Ministry Memorandum, March 1 1955; TNA AIR 20/7734
36 *Technical Development of Modern Aviation*, R. Millar and D. Sawers; Routledge & Kegan Paul, 1968, p195
37 *Knights of the Air*, Peter King; Constable, 1989
38 Air Ministry note, February 28, 1955; TNA AIR 20/7734
39 Minutes of meeting of Transport Aircraft Requirements Committee, September 23, 1955; TNA AVIA 63/11
40 Gardner, op cit, p118

conventional airliners. The insistence on short-field performance for a strategic transport aircraft, especially in "hot and high" conditions, was also a specialised requirement. As Sir George Edwards put it, "it was something the Americans never seemed to be unduly worried about".[40]

Given the growing financial crisis affecting RAF procurement in the 1950s, a dedicated fast long-range transport was an extravagant luxury, and, as the most expensive item in the equipment programme at the time, the V.1000 became an easy target. The V.1000/VC7 story underlines the inherent contradictions in the contemporary Conservative Government's approach to civil aircraft development. Without a direct military requirement — and all subsequent RAF transport aircraft would be based on civil designs — UK companies would have to rely on orders from either BEA or BOAC. This would lead to the specific tailoring of aircraft to those airlines' requirements, to the detriment of wider sales; an issue that affected the subsequent development of both the VC10 and the de Havilland/Hawker Siddeley Trident. This in turn would strain company resources to the point where the government had to reconsider its civil aerospace policy as part of a package to encourage rationalisation in 1960.

The Last Seagull

Preceding the more familiar Walrus, only 24 Supermarine Seagull V amphibians were ever built — and only one survived into the 1960s, to become a privately-owned pleasure-flying aircraft — ideal for deep-sea fishing and beach picnics — in Australia. **JAMES KIGHTLY** luxuriates in some of former co-owner Tony Whiter's splendid 1960s colour photographs of the machine — on display at RAF Museum Hendon since 1979 — and details its full history



TONY WHITER COLLECTION VIA RICHARD WHITER

OPPOSITE PAGE ***Keeping the old girl shipshape — Seagull V VH-ALB is hosed down by its crew in the lagoon at the Cypress Gardens resort at Lake Mulwala on the Victoria/New South Wales border circa 1960.*** **ABOVE** ***"Watch this!" The Seagull clatters overhead at the Cypress Gardens Motel, providing an impromptu airshow for the bathers ashore.***

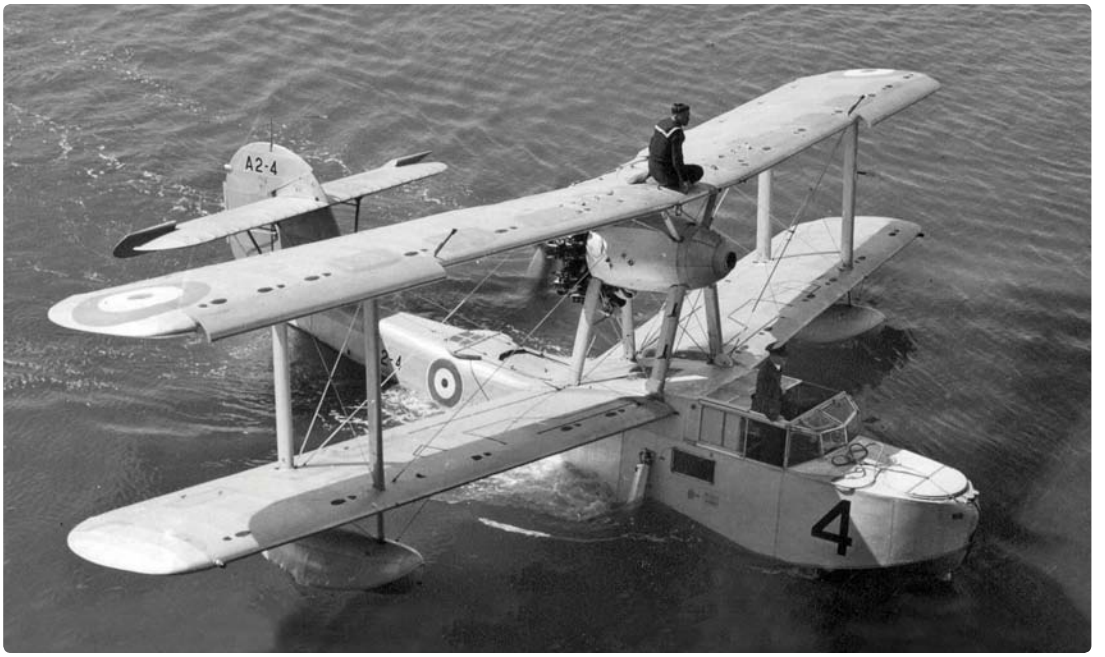
IN THE 1960s the last surviving Supermarine Seagull Mk V was made airworthy again in Australia by a trio of enthusiasts and used for holidays on the water. These halcyon days were captured in glorious colour by co-owner Tony Whiter and are shared here thanks to his son Richard.

Most utility aircraft operate quietly in the background until, one day, they're all gone. After a production run of 740 Supermarine Walrus/Seagull Vs, of which only 24 were the latter, the type had become rare by the 1950s. By 1960 just one flyer remained. Since then, a couple of wrecks have been restored, and in 2016 there are three surviving Walruses and one Seagull V, none of which is flying. The last airworthy example was Seagull V A2-4/VH-ALB.

The Seagull and the Walrus

The Supermarine Walrus was preceded by the Seagull V, originally started as a private venture in 1932 but quickly adopted for a Royal Australian Air Force (RAAF) Specification. The Seagull V prototype, N-1, made its maiden flight on June 21, 1933, in the hands of Supermarine chief test pilot Joseph "Mutt" Summers, who, to designer R.J. Mitchell's shock, looped the precious prototype at the SBAC show at Hendon five days later — the aircraft was designed to be catapulted from ships, and was thus considerably tougher than it looked!

Of the 700+ Walruses, many were made by Saunders-Roe, which built 270 metal Mk Is and all 191 wooden-hulled Mk IIs. The Seagull Vs were made in one batch by Supermarine at Woolston. To everyone's confusion ever since, the Walrus and the Seagull V are essentially identical — except that the Seagull V has Handley Page slats on the upper wings and a demountable jury strut at the inner front of each wing cellule (the strut on the Walrus being fixed). In service the only reliable way of telling them apart is by the Seagulls' RAAF A2- serials.



JAMES KIGHTLY COLLECTION

ABOVE ***A fine portrait of Seagull V A2-4 in service with the RAAF, wearing its pre-war overall aluminium colour scheme. Note the Handley Page slats fitted only to the Australian Seagull Vs and not to the later Walrus. The jury struts on the forward spars at the wing roots were also removable on the Seagull, but are absent in this photograph.***

Our subject, Seagull V A2-4, was ordered in August 1934 by the RAAF and delivered to No 1 Aircraft Depot at Laverton, Victoria, in February 1936. It was assembled there before being transferred to RAAF Point Cook, a few miles to the south on Port Philip Bay. Here the RAAF's Seagulls were initially used for marine aircraft handling training with No 101 (Fleet Co-operation) Flight.

In the mid-1930s aviation began to be used for an eclectic range of tasks. With its regular pilot Jim Alexander, A2-4 was used to assist anthropologist Dr Donald Thompson on a survey of aboriginal tribal boundaries in Arnhem Land in the Northern Territory in April 1937. Three months later the aircraft was used, again with Alexander at the controls, to research pelagic fisheries in the East Coast Fish Survey between Hobart on Tasmania and Townsville in Queensland. This task, covering more than 2,000 miles (3,200km) of Australia's eastern littoral zone, included innovations such as bombing fish shoals to stun and identify them — albeit unsuccessfully, as the bombs were equipped with the wrong fuzes.

When war broke out in 1939 the RAAF had many of its Seagull V amphibians embarked in Royal Australian Navy ships, primarily for spotting the fall of shot on the enemy fleet in battle. Before and during the war, Seagull A2-4 served aboard the ill-fated cruisers *HMAS Perth* and *HMAS Sydney*, as well as *HMAS Australia* and *HMS Manoora*, mostly while allocated to No 9 Sqn RAAF. It suffered its fair share of accidents, including wheels-up landings on runways and a hull pierced by a buoy, resulting in sinkings and subsequent recovery and repair.

Losses of Australian Seagulls were made good with Walruses, so gradually the other Seagulls disappeared. Seagull A2-4 quietly saw out the latter stages of the war as a target tug based predominantly at the large RAAF marine base at Rathmines in New South Wales.

One final front-line task was undertaken from April 1943, when it was operated from Bowen, Queensland, on anti-submarine patrols and on co-operation duties with the US Army. The two amidships Vickers machine-guns were moved to the bow gun-ring that June, presumably to attempt to suppress return fire from any submarines attacked. This was changed to single guns front and rear in October 1943. However, no submarines were encountered before the job finished that December.

In March 1946 the RAAF declared the Seagull V type to be surplus to requirements, although A2-4 continued to fly for another two months before being allocated for storage.

Civvy street

In October 1946 two Seagulls and two Walruses were purchased through the Australian Commonwealth Disposals Commission by McIllree Motors of Sydney, owned by Capt Eric McIllree. Seagull A2-4 had accrued 1,660 flying hours and was acquired for £600. McIllree set up

TONY WHITER COLLECTION VIA RICHARD WHITER

ABOVE ***In its distinctive blue-green colour scheme and bearing the name of its owner on the forward fuselage, VH-ALB makes stately progress over Victoria.*** **BELOW** ***A characteristically witty "Wrendering" of the Seagull and its three owners (from left to right; O'Hara, Gibbes and Whiter) by renowned aviation cartoonist E.A. "Chris" Wren.***

Amphibious Airways of Rabaul on New Britain, part of Papua New Guinea, using one Seagull and one Walrus, but although Seagull A2-4 was given the Australian civil registration VH-ALB in March 1951 it was not one of the two used, and remained in storage in Sydney.

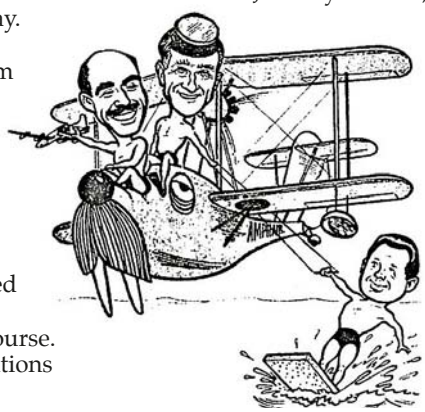
On Monday March 26, 1951, Queensland newspaper *The Morning Bulletin* reported on the two active aircraft passing through Connor Park (Rockhampton Airport) flown by McIllree and former RAAF pilot Capt Neville Bell, stating:

"It is proposed to operate over New Guinea, mainly along the Sepik Valley, New Britain, New Ireland and Bougainville."

But the actual delivery seemed more like a tour party. The report continued:

"The amphibians are making a leisurely flight, taking in the finish of the Brisbane—Gladstone yacht race yesterday. Passengers are Messrs Walter Cavill, Karl Raymond, William Bale and Phillip Heenan, all of Sydney. They take off for Mackay this morning and probably will land at Lindeman Island.

"Mr McIllree said visits would be made to the [Great] Barrier Reef, where they hoped to do some fishing from the aircraft — at water level, of course. Further north they have intentions upon the crocodiles.



"Explaining the name *Louis Roederer* [painted] on one of the amphibians, Mr McIllree said they were carrying a case of French champagne of that name 'for the first crocodile'."

It was not all fun on the tour, though. Earlier, *Louis Roederer* had been forced down by a violent storm, landing on the Tweed River in Queensland with four other men and a girl aboard in addition to McIllree. Eventually this fascinating airline came to an end, and was wound up in 1954.

To Amphair

In 1959 the stored VH-ALB was bought by a syndicate comprising highly respected Ansett Airways captain Sqn Ldr Peter J. Gibbes DFC AFC, then Ansett-ANA's operations manager; J. Harry O'Hara, formerly of the Royal Canadian Air Force and Canadair agent for the Pacific region, and private pilot Tony Whiter, who was then running a paving company.

The amphibian was assembled and refurbished (the remains of the other aircraft listed as having been "burnt for hangar space"!) and was initially registered just for private use, later upgraded on the back of Gibbes's commercial licence, to include charter work for

Amphair (Amphibious Air Charter Work) Pty Ltd, based in the upmarket Melbourne suburb of Toorak.

As well as a full colour-scheme makeover, seven seats were fitted to a redecorated interior of blue-green and silver, matching the external scheme. A new window was incorporated amidships on each side and new radio equipment and instruments were fitted. On March 17, 1960, the Seagull was flight-tested with a Bristol Pegasus VI engine and received Certificate of Airworthiness No 3617 on April 14.

Two days later the Seagull was ferried by Gibbes from Camden in Sydney to Essendon, then Melbourne's international airport. A stop was made on the 17th at Bermagui, New South Wales, to practise water circuits in the harbour area, before the aircraft flew on to Essendon the following day. Promoting the new venture to the press at the airport, Gibbes was quoted as saying: "It's a beauty. Flies very well. Even in all those gale-force winds, she was very safe. Cruising speed was 105 m.p.h. [170km/h]". He added: "What an aircraft to fish out of! Ideal for beach parties".

According to one local newspaper, a tour was flown in the aircraft by a man named David Strachan, who, with his wife and family and a man named Frank Reinehr, visited Tim Dwyer and family at Paynesville in Victoria's Gippsland lakes area. There was much talk of this starting a tourist trend, but there seems to be few other charters recorded. The aircraft was nevertheless used for pleasure flying.

On November 19, 1960, Tony Whiter flew the aircraft to Yarrawonga on the Victoria/New South Wales border for a water-skiing break, Peter Gibbes bringing it back to Moorabbin the following day. In February 1961 Gibbes took the Seagull to Wilsons Promontory ("the Prom") and back, starting from Portsea on Melbourne's Mornington Peninsula. They found that (even in winter) there was plenty of interest in a pleasure flight with "a couple of saltwater landings" for a very reasonable £2.

The last Seagull entry in Tony Whiter's logbook is dated June 23, 1962. A few days later, on the 27th, Alan Nelson flew Percival Proctor 5 VH-BJY over Port Philip Bay to photograph the Seagull, probably for an advertisement, as the costs of maintaining the amphibian were becoming unsustainable, despite the fun. It was put up for sale at £6,000.

From reef to race

The aircraft was acquired by Robert Shute for £5,000 in September 1962, with Gibbes teaching the new owner how to handle the amphibian for the required endorsement for the latter's licence.

"It's a beauty. Flies very well. Even in all those gale-force winds, she was very safe. What an aircraft to fish out of! Ideal for beach parties . . ."

LEFT ***Picture-postcard perfect — a photograph from the cockpit of the Seagull during one of its trips to the picturesque Wilson's Promontory in Victoria. The amphibian's ability to alight on the water and taxy to the more secluded beauty spots was invaluable, but charters were relatively few.***

TONY WHITER COLLECTION VIA RICHARD WHITER x 2

MAIN PICTURE ***A young lady wades ashore from the Seagull at "the Prom", to which Gibbes regularly flew for beach picnics and spear fishing. On one occasion the Seagull broke free of it moorings and drifted away from shore, leaving the crew no choice but to swim for it.***

ABOVE ***Following its restoration to airworthy status in 1969 VH-ALB was put into a crude semi-camouflage scheme with no titles on the forward fuselage, as seen here. The undercarriage has not been retracted, apparently a common occurrence if a flight was only of relatively short duration.*** PETER R. ARNOLD COLLECTION VIA AUTHOR

BELOW ***The Seagull, probably seen here moored at Portsea on Melbourne's Mornington Peninsula, was photographed by co-owner Tony Whiter sometime during the Gibbes/O'Hara/Whiter syndicate's ownership of the amphibian between 1959 and 1962. Gibbes later recalled: "It never failed to startle the odd fisherman . . . in the seclusion of his boat far out at sea, suddenly to be accosted by an amphibian whose crew asked "for a loan of some bait to do a bit of fishing please . . .".***

TONY WHITER COLLECTION VIA RICHARD WHITER

TONY WHITER COLLECTION VIA RICHARD WHITER

JOHN HOPTON COLLECTION

ABOVE ***A peaceful scene with the Seagull moored in the early morning light in the Cypress Gardens Boat Harbour, probably during co-owner Tony Whiter's water-skiing trip to the resort in November 1960.***

RIGHT ***Despite being a Seagull, VH-ALB was initially given a flying walrus motif on the forward fuselage. The stylised amphibian's body was brown, with a red flying helmet, black goggles and a white scarf with yellow polka-dots. The winged arrow on which the walrus perched was white. Not entirely appropriate, the walrus was eventually replaced with lettering.***

Shute formed the Barrier Reef Flying Boat Service at Mackay, Queensland, and operated the amphibian during the 1962–63 tourist season, making 27 flights between November and March. It was then removed from service and stored at Mackay, although it quickly deterioriated, being stored in the open with the floats stacked alongside the fuselage. The movable tail surfaces were also removed, and the blue-green fuselage began looking powdery with the old nose art starting to show through.

Around May 1964 the aircraft was moved on again, this time to a group of local Sydney businessmen including land developer Hockey Treloar and Messrs S.F. Johnson and J.L. Nicholls. The amphibian was flown occasionally but made its final flight for the syndicate in April 1966. Initially hangared at Camden, with its Pegasus engine run up every six weeks or so, by August 1968 it had been pushed out into the open and extensively damaged in a windstorm, which tore off both floats and damaged the wings.

The Seagull's flying career was not quite over, however. The following year it was transported to Bankstown for restoration, after which it was entered in the BP London—Sydney air race with race number 48 by Mr Allan E. Parkes.

In July 1969 the Seagull flew again and its C of A was renewed, the refurbishment having been estimated at A$18,000, including the fitting of an 86gal auxiliary fuel tank to enable the aircraft to undertake the longer flights required between some of the race stops. In November, too late to get to London for the start of the race, it was decided that the amphibian would join up with the other competitors at Singapore and return with them to Sydney.

In the event the Seagull was reported as "missing", but it had got as far as Deli in Portuguese Timor by December. Parkes had landed at Deli to find there was no fuel, plans for this somewhat chaotic race attempt having gone further awry. The aircraft was heavily loaded, carrying John Williams, a Sydney freelance photographer, agricultural pilot Brian Considine and Judith and Caroline Marko, noted in a

JOHN HOPTON

LEFT ***The Seagull at Bankstown, New South Wales, following its forced landing on January 27, 1970, during which a tree stump damaged the starboard undercarriage leg and gouged a long tear in the fuselage, clearly visible here.***

BELOW ***The last Seagull in its final resting place — on display in wartime camouflage and with its original RAAF serial A2-4 at RAF Museum Hendon in London.***

newspaper as "blonde, single and in their early twenties". After the required 80-octane fuel was obtained, the aircraft flew back to Bankstown, arriving on January 8, 1970, after having clocked up nearly 60 flying hours on the trip.

To the RAF Museum

On January 27, 1970, the Seagull had taken off in the early morning from Taree in New South Wales bound for Sydney when the engine stopped owing to fuel starvation. The aircraft was extensively damaged, although neither the pilot nor the passenger, aviation writer Neville M. Parnell, were injured. It did, however, mark the end of the Seagull's flying career. Having accrued 1,893 flying hours, the amphibian was ignominiously trucked back to Bankstown. In March 1972 the registration was cancelled.

The Seagull subsequently lingered in open storage at Bankstown until it was acquired by the RAF Museum in return for Supermarine Spitfire XVI TE384 plus a cash payment. The Seagull was transported from Bankstown to Darwin by the RAAF, and from there on to the UK aboard an RAF Short Belfast in March 1973.

The Seagull's hull was restored at RAF Wyton and the wings at Cardington. While repairing the long gash in the hull and removing the extra window, it was found that the amphibian was remarkably complete, despite having been vandalised and with some areas, notably the wings, in poor condition. It was completed with equipment from the RAF Museum's collection, with a lot of work by renowned RAF Museum restorer John Chapman MBE.

Completed in 1979, it reappeared in an otherwise rarely seen early-war RAAF camouflage scheme as A2-4, and was installed in the then-new RAF Museum's Battle of Britain Hall, where it remains on display today.

JAMES KIGHTLY

THE MOLOTOV EXPRESS

Using contemporary sources and official documents RAY FLUDE details the use of two converted bombers, one Russian and one American — the latter flown by British crews — which played a major part in establishing a vital wartime air bridge between the Allied leaders, the crucial dividend of a truly co-operative effort

PHILIP JARRETT COLLECTION

WHEN THE WAR became global in December 1941 the air links between Britain and the USA were already in place, established on the back of the air delivery routes across the North Atlantic and the Return Ferry Service. The links to the third key member of the alliance, the Soviet Union, were more difficult to create and made more dangerous by the barrier of the fighting on the Eastern Front. Links by air were important because they enabled rapid face-to-face contact. They were essential for the establishment of collaboration among the Allies because high-status political and military leaders did not want to be away from their own countries for the long periods of time which other transport methods required. This article aims to tell the interlocking stories of two particular transport aircraft, both converted bombers, which played important roles in maintaining the Russian connection.

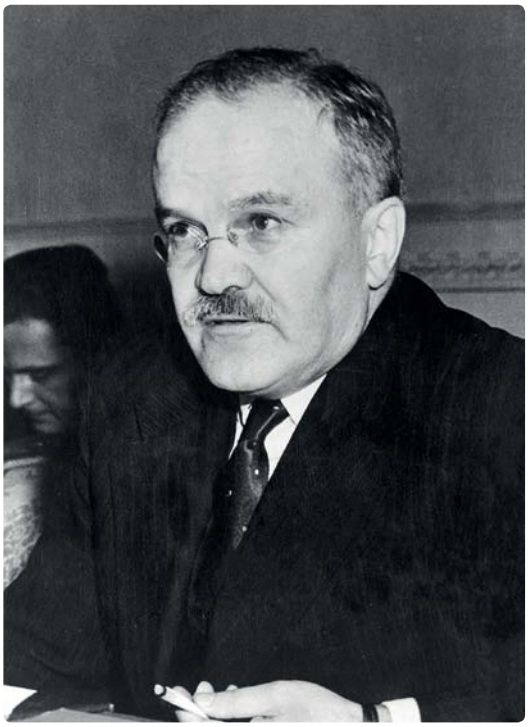
RED STARS AND STRIPES

The American President, Franklin D. Roosevelt, took the initiative by asking the Russian premier, Joseph Stalin, on April 12, 1942, if he would be willing to send his Foreign Minister, Vyacheslav Molotov, and a military adviser, to Washington DC for talks about future strategy. Stalin had not been able to join the President and British Prime Minister Winston Churchill at their previous meetings because of the precarious position of the Soviet Union after the German invasion in June 1941, but the Soviets were keen to make personal contact with their allies in the west.

Stalin agreed to the flight on April 20 and told Roosevelt that Molotov would have talks in London on the way. The President offered an American transport aircraft for the journey but Stalin insisted that a Soviet aircraft would be able to make the flight.[1*] This was the first in a sequence of high-level meetings between all three major Allies — Britain, the USA and USSR — in the spring of 1942, made possible by air transport.

The purpose of the meetings and discussions was to agree the next step in joint strategy and particularly to agree a date when Britain and the USA would be able to open a second front across the English Channel and relieve the pressure on the Soviets in the east.

The British ambassador to Moscow, Sir Archibald Clark Kerr, informed London on April 20 that the "Soviet government wished to send a four-engined aircraft direct from Moscow". At this stage he could not say who the likely passengers would be and, because this was the first flight of its kind, the V-VS (Soviet Air Force) wanted to know which airfield they should use. The RAF, in turn, asked for full details about communications, the route and the instruments the Soviet aircraft would have on board.[2]



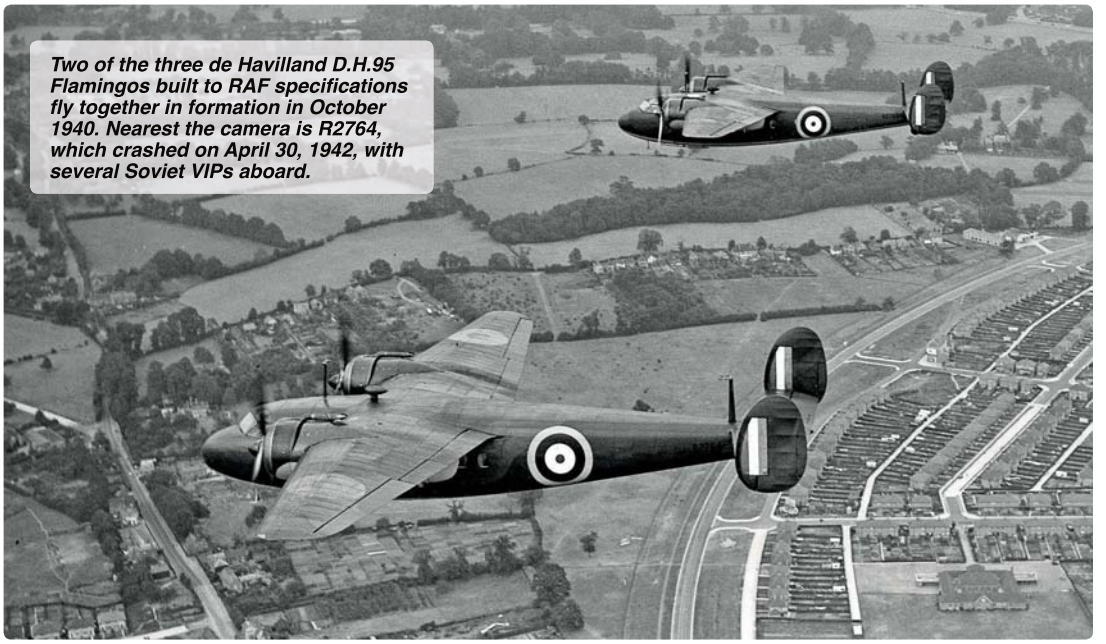
ABOVE ***Vyacheslav Molotov, Soviet Minister of Foreign Affairs from May 1939, was later memorably described thus by Winston Churchill: "His smile of Siberian winter, his carefully-measured and often wise words, his affable demeanour, combined to make him the perfect agent of Soviet policy in a deadly world . . ."***

On April 29, 1942, a test flight from the Soviet Union to Britain was undertaken via Zagorsk, Kalinin, Pskov, across the battle zone on the Eastern Front near the River Lovat at 20,000ft (6,100m), across the Baltic and over enemy territory at night across northern Denmark and the North Sea.[3] The aircraft used was a Petlyakov Pe-8/TB-7. This type was the only four-engined bomber manufactured by the Soviet Union during the war years and fewer than 100 were built. The flight took more than 10hr and the chief pilot was Major Sergey Asyamov, who had planned the route and persuaded the Soviet leadership that the flight was feasible.

The aircraft landed safely at RAF Tealing, near

OPPOSITE PAGE ***Petlyakov Pe-8 bomber c/n 42066 is greeted by British officials at RAF Tealing, near Dundee in Scotland, on its arrival with the Soviet Foreign Minister Vyacheslav Molotov on the morning of May 20, 1942.***

** ENDNOTE references, indicated by numbers at appropriate points in the text, are provided at the end of the feature.*



Two of the three de Havilland D.H.95 Flamingos built to RAF specifications fly together in formation in October 1940. Nearest the camera is R2764, which crashed on April 30, 1942, with several Soviet VIPs aboard.

PHILIP JARRETT COLLECTION

Dundee in Scotland, and the next day RAF de Havilland D.H.95 Flamingo R2764 of No 24 Sqn took the Russian Military Attaché in London, two other members of the Soviet Embassy staff and two British liaison officers, along with Asyamov, on a tour of alternative landing sites in Scotland which might be suitable for other aircraft flying from Russia. With the tour completed, the party was flying on to London when the sleek twin-engined Flamingo exploded in mid-air in a vivid orange fireball, pieces of blazing wreckage raining down on the fields near Great Ouseburn in the Vale of York. The RAF crew and all the passengers were killed outright.

SABOTAGE?

The Flamingo had been lost at about 1725hr on April 30, 1942. An investigation was ordered immediately owing to two pressing concerns. First, Churchill — who had used this very aircraft as a VIP transport on his missions to France in 1940 to encourage the French government — wanted to know whether the Flamingo was still safe to use to carry VIPs.[4] Secondly, the presence of important Soviet officials on the aircraft raised the question of sabotage. If this was indeed the cause of the explosion it could jeopardise the vital discussions between the Allies about a joint strategy for winning the war. These discussions depended on the use of air transport.

The immediate concern was sabotage. A Court of Inquiry was rapidly drawn together and Soviet officers had to be involved. It was found, however, that the cause of the explosion was a fault in the starboard Bristol Perseus engine, as the report explained:

"The failure of a piston led to a cylinder breaking off, resulting in fire and explosion, presumably of the fuel tank, and the breaking away of the starboard wing at the root".

The cylinder in question was recovered well away from the central area of the crash. All the engine parts were examined by Bristol and sabotage was ruled out. In addition, no evidence was found to indicate that servicing had been inadequate. The outcome was recorded on May 3 and Churchill was assured, after further enquiries, that the aircraft type was still considered safe for VIP passengers.

The Soviet bomber returned to Moscow after the successful test flight, flying overnight on May 1–2 with Asyamov's copilot, Col Endel Puusepp, at the controls. Following the Flamingo accident, British Foreign Minister Anthony Eden and Ivan Maisky, the Soviet Ambassador to London, exchanged messages of sympathy for those killed in the crash. For a while it was feared that the incident might prevent Molotov's visit altogether. Maisky *[whose fascinating diaries from 1932–43 were published by Yale in 2015 — Ed.]* could only say that he "didn't know whether this would affect Molotov's journey".[5]

Despite these anxieties Molotov, together with military advisers Rear Admiral Kharlamov and Maj-Gen Asseyev, accepted the risks and flew overnight on May 19–20 from Moscow to Tealing using the same Pe-8, piloted by Puusepp. Information about when Molotov's aircraft might arrive was left somewhat sketchy owing to tight Soviet security.

Sir Alexander Cadogan, the British Permanent Under-Secretary for Foreign Affairs, describes in his diaries how he flew to Tealing to welcome Molotov, who had been expected on May 10. A

The mighty four-engined Pe-8 at Tealing on May 20, 1942. The Pe-8/TB-7 prototype made its first flight on December 27, 1936, the type becoming the only four-engined bomber built by the Russians during the Great Patriotic War. The Pe-8 that brought Molotov was a standard production example, fitted with four 1,340 h.p. Mikulin AM-35A V12 liquid-cooled engines.

PHILIP JARRETT COLLECTION

special train was waiting near the airfield with Soviet ambassador Maisky on board, but since the aircraft had still not arrived by May 14 the train returned to London. Molotov eventually arrived on the morning of May 20, and was photographed bundled up in a bulky flying suit, flying helmet and oxygen mask, underlining the fact that the flight had been at high altitude in an unheated unpressurised bomber.[6]

TO LONDON AND WASHINGTON

Molotov then travelled to London by train and had discussions with Churchill and Eden. This was a very important high-level contact, since, at this point, neither Churchill nor Roosevelt had met directly with any of the Soviet leadership. Molotov was still looking for a treaty to guarantee Russia's pre-June 1941 frontier, including the parts of Poland annexed as a result of the Nazi-Soviet Pact, and he also desperately wanted to encourage Britain and the USA to begin to move on a second front to ease the pressure on the Soviet Union. He did not secure a firm commitment on either issue from Churchill, but a 20-year treaty of friendship was signed and "full understanding was reached with regard to the urgent task of creating a second front in Europe in 1942".[7]

On May 27, 1942, the Pe-8 took Molotov on to Washington DC from Prestwick via Iceland, Goose Bay, Labrador and Montreal, arriving in the American capital on May 30. There he met with Roosevelt and Harry Hopkins, one of the former's

VIA MIKHAIL MASLOV

ABOVE LEFT ***Molotov, in heavy flying suit and boots, is welcomed to the UK by RAF officers after climbing out of the Pe-8 at Tealing on May 20, 1942.*** **ABOVE RIGHT** ***The Soviet Foreign Minister (centre) takes a stroll with the British Prime Minister in London. To the left of Molotov, in hat, is the Soviet Ambassador to London, Ivan Maisky.***

ABOVE ***President Franklin D. Roosevelt (left) and Molotov discussed the possibility of opening a "second front" during the Soviet Foreign Minister's visit to Washington DC during May–June 1942. Roosevelt was initially keen to land troops in France and relieve pressure on the Russians by the end of 1942, but Churchill counselled that any such plans be shelved for the time being.***

closest advisers who had helped to create and run the USA's New Deal development programmes of the 1930s. The flight had been codenamed Operation *Switch* and all RAF personnel involved were instructed that "the utmost secrecy is to be observed regarding this operation".[8] Puusepp was personally congratulated by Roosevelt on completing the flight safely after the aircraft burst a tyre on landing at Washington DC.

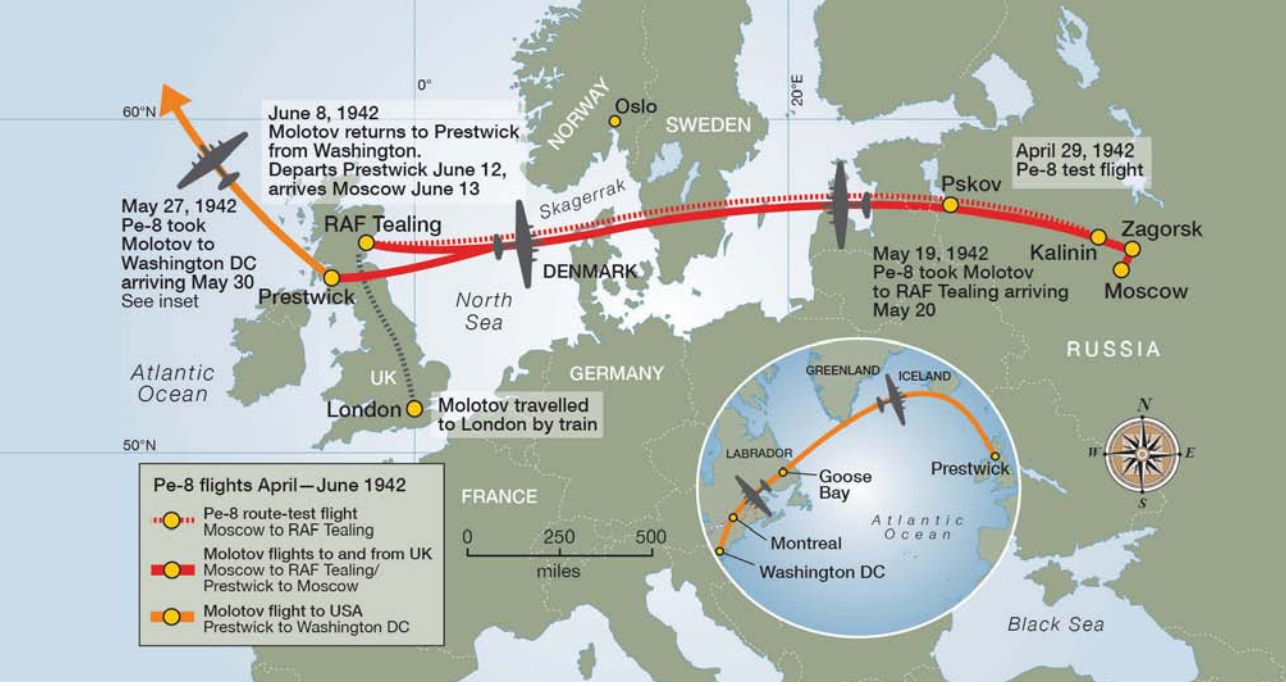
In the discussions in the White House, Roosevelt felt the need to make stronger undertakings than the British had been willing to commit to about the opening of a second front during 1942, in order to encourage the Soviet Union to remain in the war alongside the Allies. The message that the British were not as positive as the USA on this issue was relayed to Stalin and was to be the cause of many future problems.

On the return flight from Washington DC, starting on June 4 via Canada, Greenland and Iceland, the RAF's No 44 (Ferry Service) Group was alerted by the Air Ministry that "a four-engined aircraft similar to a [Boeing B-17] Fortress, camouflaged brown and green, carrying important passengers, was leaving Gander [in Newfoundland] for Britain . . . it was not to approach Britain after dark".[9] The return flight was codenamed Operation *Shaft* and the aircraft landed at Prestwick on June 8, allowing Churchill and Molotov to have further discussions about the possibilities of a second front. The Pe-8 then continued from Prestwick, surviving an attack by enemy fighters on the way, to land in Moscow on June 13.[10]

This had been a vitally important first contact between the leaders of all three of the major Allies and could have been put at risk as a result of the Flamingo accident. Although Molotov and Stalin would not have been satisfied with the slow pace at which Britain and the USA were moving towards a second front in Europe, an Anglo-Soviet Treaty was agreed and signed, Molotov's visits playing an important part in maintaining the relationship and holding the alliance together. There was a very real fear in Britain and America at this time that Stalin might make a deal with

BELOW ***The Pe-8's wingspan of 128ft 4in (39·13m) was greater than that of any contemporary operational British or American four-engined bomber, although the B-24 Liberator's slender Davis wing of 110ft (33·5m) came close. Note the Hurricane seen here in the background at Tealing, home to the RAF's No 56 Operational Training Unit.***

PHILIP JARRETT COLLECTION



Hitler, which would then allow the massive German forces engaged on the Eastern Front to turn against Britain.

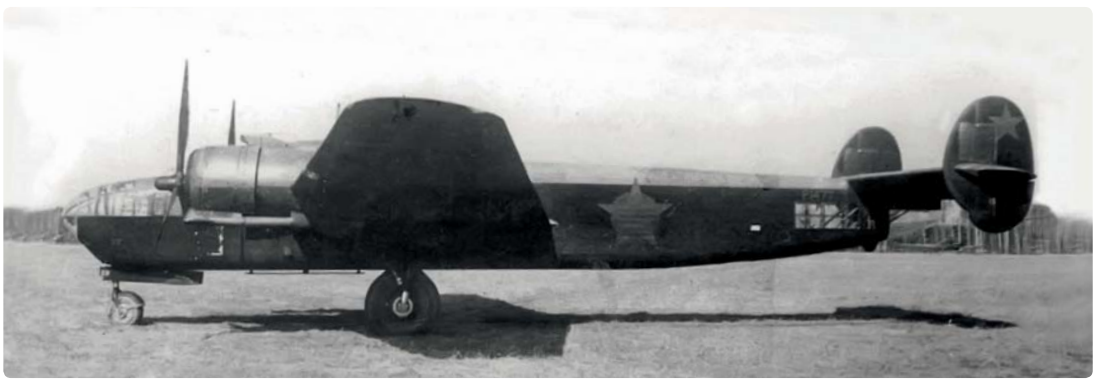
INTO ACTION AGAIN

The same Pe-8 was called into action again early in 1943 to bring groups of Soviet pilots to Britain. The RAF's No 305 Ferry Training Unit (FTU) had been created at RAF Errol, Tayside (now Perth and Kinross), Scotland, in December 1942. It was an unusual unit in that, while other FTUs were busy training RAF pilots and crews to fly aircraft to the Middle East and India, No 305 FTU was tasked with training Russian aircrews to fly a total of 100 twin-engined Armstrong Whitworth Albemarles direct to Russia across the Baltic.

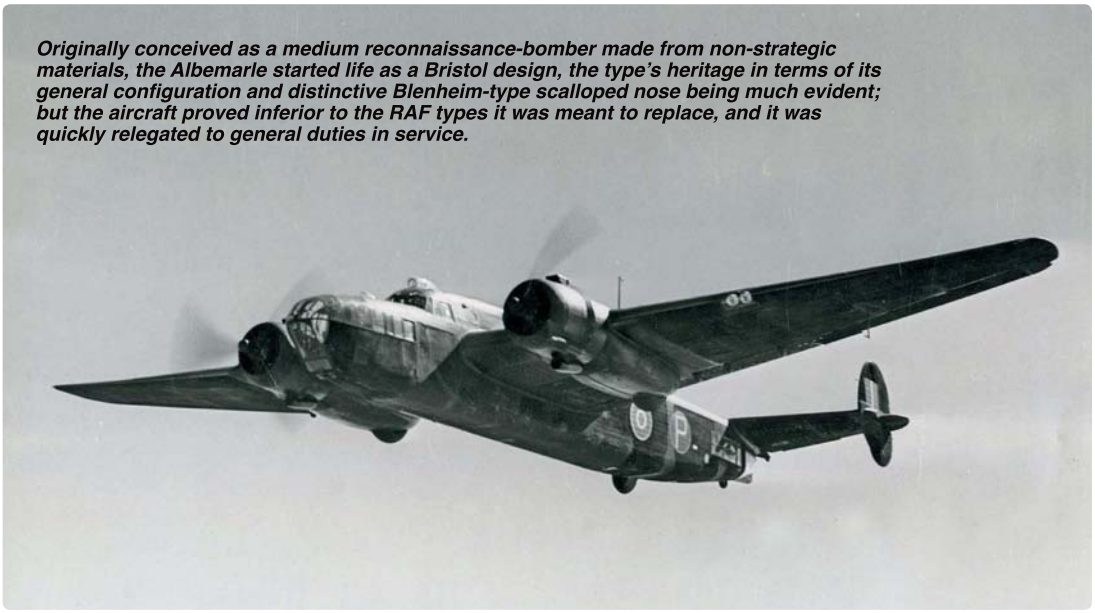
The little-loved Albemarle, which entered RAF service in January 1943, had originally been designed as a medium bomber, but never served in that role — it being clear from the start that existing aircraft like the Vickers Wellington were still superior. Instead it had been relegated to general and special transport duties.

ABOVE ***This map by MAGGIE NELSON shows the flights made by the Pe-8 in support of Molotov's meetings with Churchill and Roosevelt during May–June 1942.*** **BELOW** ***One of the 14 Albemarles despatched to the Soviet Union by No 305 FTU at RAF Errol. Two of these, P1455 and P1645, were lost en route and another, P1647, had to return following oil-feed problems. It was, however, fixed and sent again.***

The new FTU commenced operations on January 1, 1943. The Albemarles were prepared by No 2 Overseas Aircraft Preparation Unit (OAPU) at Filton, near Bristol, before being flown north to Errol. When despatched from the latter the aircraft were to have 15 flying hours available before the next inspection and to have evidence of fuel-consumption tests and a signed-off weight sheet. The aircraft would leave under the control of Prestwick and were to arrive, under the supervision of Moscow Master Control, at Kalyazin on the Volga, about 65 miles (100km) north of Moscow. Flying with three 210gal overload fuel tanks at 2,000ft (600m) at a speed of 160 m.p.h. (255km/h), the aircraft had a safe



VIA VLADIMIR KOTELNIKOV



Originally conceived as a medium reconnaissance-bomber made from non-strategic materials, the Albemarle started life as a Bristol design, the type's heritage in terms of its general configuration and distinctive Blenheim-type scalloped nose being much evident; but the aircraft proved inferior to the RAF types it was meant to replace, and it was quickly relegated to general duties in service.

TAH ARCHIVE

range of 1,900 miles (3,050km), equating to some 13¼ flying hours.

The plan was for the FTU to train eight crews at a time, each of four men; 16 crews altogether would be needed to deliver all 100 Albemarles. Training the crews would take a total of two months, after which the station would be a despatch base for about six months while the delivery flights were undertaken and the crews were rotated back to Britain. This was a project with a very high profile politically and diplomatically. It was an early example of joint Soviet/British activity in Britain and as a result there was a stream of VIP visitors from the British Air Ministry, Soviet Embassy, Soviet Military Mission and Trade Commission.[11]

The Pe-8 which had carried Molotov had by this time been converted to carry up to 20 passengers, and in the spring of 1943 the aircraft made two flights from Russia to the UK. The first was made on March 13, 1943, when eight Russian officers were flown to Prestwick in the Pe-8, piloted by Endel Puusepp, to join the FTU at Errol. The flight started from Kratovo on a route to Prestwick via the Baltic, neutral Sweden, Norway and the North Sea. This flight, however, gave rise to a complaint from the RAF sent through the Military Mission in Moscow. The Soviets had ignored the arrangements for flights over the northern routes between the Soviet Union and Britain, which included a warning of the flight 48hr in advance, an exchange of weather forecasts, a flightplan sent an hour before take-off and a departure signal to confirm that the aircraft had left. As a result the controllers at Prestwick could not alert the air defences and the aircraft had run the risk of being intercepted and shot down. The British Ambassador had to take this up in Moscow.

The next flight from the Soviet Union, on April 8, brought 13 Russian officers, of which five were returning to Britain after having made successful Albemarle delivery flights.

ROUTE CONSOLIDATION

The job of carrying the Russian crews to Britain was shared between the Pe-8 and a BOAC Consolidated Liberator Mk I. At the time there were two main BOAC air routes to the Soviet Union, one codenamed *Sealyham* and the other

Petlyakov Pe-8 c/n 42066, the 28th production example of 93 built, was relatively new when called upon to transport the Soviet Foreign Minister on his travels. The radiators for the cooling of all four liquid-cooled V12 engines were installed in the two inner nacelles. Artwork by JUANITA FRANZI / AERO ILLUSTRATIONS © 2016

PHILIP JARRETT COLLECTION

The first Liberator to arrive in the UK, at Squires Gate on March 14, 1941, AM259 was allocated to BOAC and given the civil registration G-AGCD the following month, before beginning extensive operations on the Corporation's transatlantic Return Ferry Service between Prestwick, Newfoundland and Montreal.

Festoon. The former took a route via Gibraltar, through the Mediterranean to Cairo in Egypt, on to Tehran in Iran and into Russia. This was used on an irregular basis from 1941 onwards, but in October 1942 a BOAC crew tested *Festoon*, a more direct northern route to Moscow from Prestwick.

The Liberator I which made the BOAC *Festoon* test flight and provided the resulting service was AM259, operating with the civilian registration G-AGCD. This aircraft was one of those that had made emergency ammunition resupply flights to the Middle East in July 1942 (see the author's *A Supreme Effort* in *TAH10)*. The *Festoon* test flight on October 21, 1942, had taken off from Prestwick in the evening, flown north to the Arctic Circle, crossed Norway during the night and the Eastern Front before dawn, arriving over Moscow in daylight so that it could make a landing with reasonable visibility.[12] The Liberator had arrived safely despite encountering some anti-aircraft fire over the front line, and nine further flights took place over that winter following the same route.

Several of these flights were to bring Soviet aircrews over for training at RAF Errol. On the first of these the Liberator left Prestwick for Ramenskoye airfield, 30 miles (50km) south-east of Moscow, on January 4, 1943, and returned with ten Soviet officers on the 11th. Similar round-trips delivered a further 12 Soviet officers to the UK on January 28, a dozen more on February 22 and another 12 on March 7. The weather took a hand in the next BOAC round-trip, which left Prestwick on March 18 and collected eight more officers. The Liberator was forced by bad weather to return to Britain using the southern *Sealyham* route via Tehran, Cairo and North Africa, and is logged in the No 44 Group traffic reports as arriving at Prestwick on March 22 from Marrakesh.

PIONEERING THE ROUTES TO RUSSIA

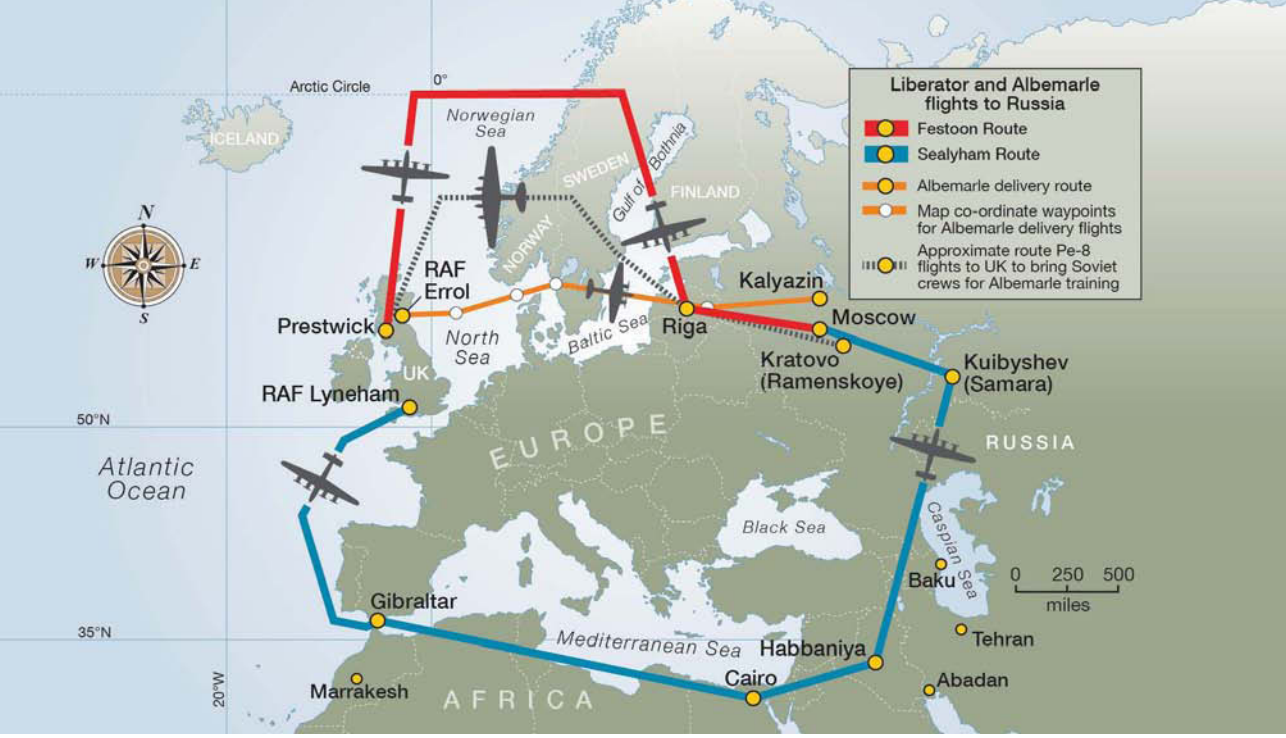
THE NORTHERN ROUTE to Moscow had first been used in the autumn of 1941, by two US Army Air Corps B-24 Liberators carrying members of a mission to Moscow led by American special envoy W. Averell Harriman and Lord Beaverbrook, the British Minister for Aircraft Production. The two principals travelled by sea but others, including Constantine Oumansky, the Soviet Ambassador to Washington DC, used the two aircraft.

The flight represented an innovation in air transport, showing the potential for long-range aircraft to make possible frequent face-to-face meetings of decision-makers anywhere across the globe. The B-24s flew non-stop from Prestwick, far to the north beyond the North Cape, over Archangel and on to Moscow. At times the temperature inside the aircraft dropped to -20°C (-4°F) and heavy ice formed on the wings.

At the banquet for the delegation in the Kremlin a few days after its arrival, Stalin made a point of walking around the table to toast the two B-24 pilots to recognise their achievement. The main delegation returned to Britain by sea but the two B-24s again demonstrated the potential power of air transport for the Allies. One returned to the USA via Tehran, Cairo, Bathurst in West Africa and across the South Atlantic to Natal in Brazil. From there it flew on to Miami, gathering information about the route on the way.

The other returned to the USA by flying the other way around the world via Tehran, India, the Philippines and across the Pacific, stopping at Wake Island, Hawaii and California.

Sources: *Special Envoy to Churchill and Stalin*, W. Averell Harriman, 1975, pp 83/4; also *The Flying Years*, Lou Reichers, 1956, pp174–216



MAP BY MAGGIE NELSON

By this time the Albemarles were being ferried to Russia, the first departing Errol on March 3, followed by five more the same month. The flights left in the early evening, requiring a lengthy period of darkness to cross the Skaggerak and the Eastern Front in safety. By the middle of May 1943 20 crews had been brought to Britain and trained and no more had arrived. In the lull the Russians were taken to see Blair Atholl Castle and to the Scottish Cup Final at Hampden Park.

A total of 14 Albemarles (of which two were lost) had been despatched by No 305 FTU over the northern route to the Soviet Union when the Russians asked for the remainder of the aircraft to be delivered through the Mediterranean. This route was now cleared after the Allied victories in North Africa and was available for use. It was also apparent that the northern route across German-occupied territory and the combat zone on the Eastern Front was already very hazardous for the Albemarles, particularly in summer when the period of darkness and the cover it afforded was very short. The *Festoon* transport route was also shut down for the summer for the same reason.

The shortcomings of the Albemarle were also becoming increasingly obvious and the Russians cancelled the order. They were already beginning to receive hundreds of Douglas C-47 transports via the ALSIB (Alaska—Siberia) route from the USA, which fulfilled their needs much more effectively. *[For more on the ALSIB route see* Sub-Zero Inc. *in* TAH11 *— Ed.]* Liberator G-AGCD continued to carry out *Sealyham* flights to Moscow via the Mediterranean, Cairo and Tehran during the autumn of 1943.

BIG PLANS FOR 1944

At the first meeting between Stalin, Churchill and Roosevelt at the end of November 1943 in Tehran (codenamed *Eureka*), it was agreed that the Soviet summer offensive for 1944 in Belorussia (now Belarus) should be timed to support the D-Day landings in Normandy, and that deception plans leading up to the two operations should be linked.

Colonel John Bevan, an ex-stockbroker and decorated veteran of the First World War, led the

Consolidated Liberator Mk I c/n 2 was originally given the RAF serial AM259, but official documents show that the aircraft flew with the civilian registration G-AGCD for its* Festoon *and* Sealyham *flights to the Soviet Union during 1942–44. Artwork by JUANITA FRANZI / AERO ILLUSTRATIONS © 2016

Another type which made an invaluable contribution to the establishment of an air bridge between the Allied leaders was the Boeing 314A Clipper, BOAC examples of which carried Churchill to the UK from the crucial* Arcadia *conference in Washington in January 1942 (G-AGCA* Berwick*) and back to the USA for the Second Washington Conference that June (G-AGBZ* Bristol*, as seen here).

PHILIP JARRETT COLLECTION

Allied top-secret London Controlling Section, responsible for the overall planning, supervision and co-ordination of strategic deception on a worldwide basis. On December 6, 1943, Bevan received his formal brief: "To persuade the enemy to dispose forces in areas where they can cause least interference with Operations *Overlord* [the invasion of Normandy], *Anvil* [the invasion of southern France] and with operations on the Russian front".

To co-ordinate the planning Bevan was sent to Moscow with an American colleague, Col William Baumer. The pair departed Prestwick on January 29, 1944, in Liberator G-AGCD (AM259). Bevan's position and his knowledge of vital Allied secrets — including the various elements of the Operation *Bodyguard* deception plan, the codebreaking secrets of *Ultra* and the plans for *Overlord* — made travel outside the UK by air so close to enemy occupied territory a very serious security risk. Nevertheless, it was felt that despite this he had to fly to Moscow to brief senior Soviet officials in person to get their support for the plan.

Along with Bevan and Baumer in the Liberator were Sir Archibald Clark Kerr, British Ambassador to Moscow, three RAF officers and a returning Soviet diplomat, Gronov, with his wife. All were sitting on mattresses and sleeping bags on the floor of the boarded-over bomb bay. The aircraft was flown by Capt Jan Moll, a legendary pre-war KLM pilot who had flown some of the Middle East resupply missions in July and August 1942.

This flight to Moscow was designated as a *Special Festoon* flight over the northern route. Most of the flights to Moscow by early 1944 routed via the southern *Sealyham* route through

THE SUMMER OF '42
THE IMPORTANCE OF AIR TRANSPORT TO ALLIED STRATEGY

THE SPRING AND summer of 1942 saw several important Allied strategy meetings, all of which were made possible only by the use of air transport. These were:

April 8
President Roosevelt's close adviser Harry Hopkins and US Army Chief of Staff General George C. Marshall flew to London using a Boeing 307 Stratoliner and a Boeing 314 Clipper

May 19–June 13
Soviet Foreign Minister Vyacheslev Molotov flew to London and Washington DC and back to the Soviet Union aboard a Petlyakov Pe-8

June 15
British Chief of Combined Operations Vice-Admiral Louis Mountbatten flew to Washington DC for a meeting at the White House using Consolidated Liberator AL504 *Commando*

June 17
Prime Minister Churchill and British Chief of the Imperial Staff Gen Alan Brooke flew to Washington DC aboard BOAC Boeing Clipper G-AGBZ *Bristol*

July 18
Hopkins, Marshall and the American Chief of Naval Operations Admiral Ernest King flew to London aboard a Boeing Stratoliner

August 10
Churchill and American special envoy W. Averell Harriman flew from Cairo to Moscow to brief Stalin, using three Liberators including AL504 *Commando*

Liberator G-AGCD following its conversion to civil configuration at the end of April 1941. The aircraft went on to have a distinguished wartime career, including participating in the vital resupply flights to the Middle East in July 1942, before being struck off charge at Dorval in November 1945. PHILIP JARRETT COLLECTION

RIGHT *Typical accommodation looking aft in the cabin of a Ferry Service Liberator, with side seats in the rear of the cabin, bunks in the bomb bay and a shelf — known as the "Bridal Suite" — above the bomb-bay.*

TAH ARCHIVE

the Mediterranean, following the defeat of the German and Italian forces in North Africa in May 1943. Although safer, the Mediterranean route took much longer; 3½ days as opposed to 13hr.[13] Unfortunately, Bevan's flight turned into a shambles and shows how close to the edge of disaster these long-distance flights could stray.

The aircraft was fired on by anti-aircraft artillery as it crossed occupied Norway, added to which the oxygen system failed to work properly. On arrival at Moscow, the crew could not find the correct landing field in the snow-covered terrain and had to make an emergency landing on a military airfield. The passengers were in such a poor state by the time they reached the ground that Bevan had to be carried unconscious from the aircraft.[14] The Head of the Air Section of the Military Mission in Moscow complained bitterly about the management of the flight:

"[His Excellency the Ambassador] and the rest of the afterguard [passengers] arrived in a very dicky state having spent a few hours at 22,000ft [6,700m] without oxygen".

The subsequent investigation found that the radio officer had failed to open the valve supplying oxygen to the passengers' masks, and that the briefing officer at Prestwick had confused Greenwich Mean Time (GMT) and Moscow local time, which meant that the radio beacons at the Soviet airfield used to guide the aircraft to the correct landing field were not turned on as the Liberator approached.[15]

Having disembarked the passengers, the aircraft was unable to return over the same route because of severe weather conditions, and on February 7, 1944, it flew back to Britain via Habbaniya in Iraq, Cairo and Gibraltar, arriving at Lyneham on February 11.

Fortunately Bevan recovered from the journey and the discussions kept him and Baumer in Moscow for five weeks until the Soviets sanctioned the deception plan and agreed to co-operate with its implementation, after which Bevan and Baumer returned to Britain again using G-AGCD on the *Sealyham* route via Baku in Azerbaijan, Tehran and Abadan in Iran, Cairo and Gibraltar.[16]

SQUEEZING FROM BOTH SIDES

As agreed by the "Big Three" in Tehran and reinforced by Bevan's mission, Russian plans for Operation *Bagration* — the Soviet clearing of German forces from Belorussia — were now closely co-ordinated with the Anglo-American plans for the invasion of France.

Stalin was informed of the planned date for the Normandy landings on April 18, 1944, and on the 22nd he confirmed with Roosevelt and Churchill that "as agreed in Tehran, the Red Army will launch a new offensive at the same time so as to give maximum support".[17]

LEFT ***The "Big Three" — Stalin, Roosevelt and Churchill — at the Tehran Conference held during November—December 1943. It was the first time the three leaders had met together, and was crucial for the planning of the 1944 operations that would see the beginning of the end of the war in Europe.***

All the elements of the deception plan to which the Soviets had agreed to contribute were also put into effect. Information was leaked that the Soviet offensive in the east would not begin until July, German attention was drawn to a proposed invasion of Norway by American, British and Soviet troops and a proposed British attack on Crete. The Germans were fed information on potential Soviet attacks on the Bulgarian and Rumanian coast and the Soviets exerted pressure on Axis satellites to defect from the alliance.

All of this worked well and in the weeks leading up to the Normandy landings Soviet forces made menacing moves in the Arctic and Black Sea regions, and simulated a developing seaborne attack on Petsamo from the Kola inlet. Diplomatic pressure was also exerted on Bulgaria and Rumania, and misleading intelligence was leaked to the Germans about meetings between Soviet, British and American military planners in Scotland to co-ordinate attacks on Norway.[18]

On June 22, 1944, the Red Army launched Operation *Bagration* to attack the German Army Group Centre in Belorussia. The start date had been delayed from June 14 by rail hold-ups but when it came the Soviet attack was the largest single operation of the war. There was now a concerted effort by the Allies to attack the Germans from both east and west. Some 2·3 million men from the Red Army were involved in *Bagration* and the attack led to the movement of strategic German reserves away from France.[19]

The US Army's breakout from the Normandy beachhead under General Bradley as part of operation *Cobra* followed on July 25. This opened up the last and most bloody stage of the land war. In July 1944 German war dead since the conflict began was already standing at 2·8 million, but the next nine months would bring the deaths of 4·8 million more. [20]

Two aircraft, one Soviet and one American — but flown by a British crew — had played a vital role in linking the Allies at some of the most significant points in the war.

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NEW YEAR ON SKYLINE RIDGE

Following on from his two-part series about Air America in Laos in our second and third issues, **JONATHAN POTE** recalls being invited in January 1966 to celebrate the Meo Lunar New Year at Sam Thong, reached via an unforgettable flight from Vientiane to Lima Site 20, a remote airstrip buried deep in the Lao jungle . . .

IN SEPTEMBER 1965 I left school and volunteered for what would now be called a "gap year" before studying medicine. It was only appropriate that I should be sent to work on a medical team, but extremely fortunate for me that it should be in Laos in South-east Asia. Then, as now, it was a little-known country; at Heathrow nobody at BOAC seemed to have heard of it, but eventually I walked across the apron with the other passengers bound for Bangkok, Thailand, and boarded Boeing 707 G-APFE.

On the flight out I was invited to sit in the cockpit for some time, although even then I was not allowed to sit in the First Officer's seat. (A few months later, in turbulence over Mount Fuji, Japan, this aircraft's fin failed and all aboard perished.) At Bangkok I boarded Douglas DC-3 XW-TAF of Royal Air Lao before temporarily returning to the tarmac while a large hammer and some slightly more sophisticated tools were applied to one of the Pratt & Whitney Twin Wasps. Eventually we were airborne, heading north towards Laos through the turbulent monsoon clouds. The aircraft leaked, to the extent that I had to use a waterproof over my head to deflect the rainwater to one side. A visit to the toilet had added interest, as a large inspection panel in the rear bulkhead was missing and I could look through the tailwheel aperture to the drenched jungle not far below. The turbulence was severe, and to an impressionable 18-year-old it could have been Burma in 1944 below. In fading light, we circled Wattay (Vientiane airport) beside the Mekong. In the gloom I saw many Douglas C-47s and Curtiss C-46 Commandos parked around. Yes, I thought, this is going to be a *very* interesting year.

An innocent abroad

Into the complex, confusing and, above all, conspiratorial situation that was Laos in 1965 I had blundered with a camera and a diary, but I was received almost everywhere in a friendly and helpful manner.

By the time I arrived Aviation Lao had become the Royal Lao Air Force (in 1960), Civil Air Transport had transformed into Air America Inc (1959) and the Office of Strategic Studies had become the Central

LEFT ***Spending his "gap year" with a medical team in Laos as part of the Colombo Plan, the author was afforded the opportunity to take numerous photographs of the exotica to be found in South-east Asia in the early days of the Vietnam conflict. One example was de Havilland Canada DHC-2 Beaver "82053" of the Royal Lao Air Force, snapped at Thakhek West in November 1965.***

ALL PHOTOGRAPHS BY THE AUTHOR

Illustrating the primitive nature of the airstrip at Sam Thong, this photograph shows Scottish Aviation Twin Pioneer XW-PBP (c/n 567) at Lima Site 20 on January 9, 1966. Although the aircraft is painted in Philippine Air Lines colours, and was indeed registered to the airline as PI-C434, it never served with the company. It was acquired by CIA cover airline Bird & Sons in December 1963 before being transferred to another CIA surrogate, Continental Air Services Inc, in September 1965. It was damaged beyond repair in a thunderstorm at Vientiane in March 1968.

MAP BY MAGGIE NELSON

Intelligence Agency (in 1947). The few original airfields had been supplemented by many new airstrips. The older airfields were given "L", or "Lima", numbers, these signifying Laos, not "Landing". "Victor" airfields were those located in neighbouring Vietnam (initially, strips in Laos used the "Victor" prefix, but this was soon changed). Newer, and almost invariably smaller, strips were prefixed by "LS" for "Lima Site", these eventually totalling several hundred.

Many of these strips served genuine civilian projects of USAID, the United States Agency for International Development; many were rather more sinister in their use. Several had alternative strips suffixed with an "A", for "Alternate", the primary site being unusable in the wet season. However, one such site — LS 20A — was merely LS 98 renumbered as a cover for Long Tieng (a secret airfield), LS 20 at Sam Thong nearby being all-weather; LS 20A was usually called just "Alternate". Rumours suggested there was a 10,000ft (3,000m)-long earth strip on the Plaine des Jarres for Boeing B-52s damaged over North Vietnam. If there was, it was never used. There were numerous American military personnel in the country, some 50 accredited to the Embassy as "Assistant Military Attachés", but many more were even less accountable.

Everything in Laos was illogical and blurred. The US Ambassador personally controlled all military and USAF assets. "Civil" airlines such as Air America, Continental Air Services Inc (CASI) and Bird & Sons flew the secret or "black" missions, the Royal Lao Air Force did the smuggling and there were more foreign than Lao troops in the country by far (despite the indigenous three-way civil war within the broader East–West conflict).

While some very good personal accounts of those years have appeared in print, official American records regarding Laos are sealed for 75 years, far longer than those for Vietnam. When these files are opened in 2050 there will be nobody who was in Laos during the "secret war" still alive to interpret them. Records of the Kingdom of Laos are presumed destroyed by the victorious Communists. Presented here is my recollection of just one small episode in the oft-forgotten secret war in Laos.

To the Meo capital

Each year, for dubious political benefit, Air America, aided by other companies, was contracted to fly all the diplomatic staffs in Vientiane to Sam Thong, to watch the indigenous Meo (later Hmong) people's Lunar New Year celebrations, or *Pi Mai Meo*. By chance I was in Vientiane on that day, January 9, 1966, and officially on the Embassy staff even if at the lowest level.

An invitation card secured, I headed off to Wattay airport in the early morning with three

Dornier Do 28B-1 N9180X (c/n 3060) parked beside DHC-4 Caribou "392" at Sam Thong. Operated by Bird & Sons, in whose distinctive red-and-cream colour scheme it is seen here, N9180X later went missing en route from L 54 (Luang Prabang) to L 25 (Ban Houei Sai) on April 6, 1967, with six aboard.

companions. Showing our invitations in lieu of passes, we were directed towards an Air America Fairchild C-123B Provider. Luckily, one of our group (and the only Lao national employed by the medical team) was the daughter of Touby Lyfong (Conseiller du Roi and the most important Meo personage). She headed instead for a very smart Dornier Do 28B-1, N9180X, (one of a quartet owned by Boun Oum Airways and used for VIP work by the American Embassy). The pilot accepted us as his load without question or noting our names and left immediately. We taxied past neat lines of perhaps two dozen aircraft — Helio Couriers, Pilatus Turbo Porters, Do 28s, de Havilland Canada Caribous, Douglas C-47s and Providers — clearly this was a "maximum effort" operation, and were soon airborne.

As the ground war had see-sawed back and forth across the Vietnam/Laos border the communists had inexorably pushed the American-supported Meo southwards off their mountaintop villages, their "capital" of Xieng Khouang (on the Plaine des Jarres) falling to the enemy. A new administrative capital was established at Sam Thong, just to the south-west of the Plain.

Nearly 4,000ft (1,200m) above sea level and only connected to the outside world by almost impassible tracks over tortuous terrain, Sam Thong had accumulated more than 4,000 inhabitants in less than four years, boasting a teaching hospital with 250 beds, a comfortable chalet for Air America crews staying overnight and many other large buildings. A single driveable dirt road headed south-east over "Skyline Ridge" to Long Tieng or "Alternate" (LS 20A), the busy secret military base with a population of some 40,000. It was the headquarters of General Vang Pao and the base for a huge CIA/Air America operation, including the Meo (Hmong) North American T-28 strike force after 1967. Accidental visitors were held at gunpoint and flown out blindfolded. Dire threats were made to dissuade them from speaking later of their experience.

We cruised northwards, a lone aircraft at some 7,000ft (2,100m), towards distant peaks 10,000ft (3,000m) high and still partly shrouded in morning mists. The view of the finest remote country I was to see in South-east Asia was superb through the large bulged windows of our cabin, with just four seats, two facing forward and two facing aft. We passed over the couple of Couriers that had left before us. Far below, they seemed too low to clear the tree-covered razorback ridges. We also passed over Phou Khao Khwai, where an abandoned T-28 lay wrecked beside the dirt strip. It was slowly being stripped of its aluminium skin by villagers using it to fashion various implements. We had visited the area by Land Rover some weeks previously.

LEFT ***An abandoned North American T-28 of the Royal Lao Air Force at Phou Khao Khwai in December 1965. The locals quickly reduced the aircraft to a hulk, taking anything usable to make tools and other useful items.***

BELOW ***Not for the faint-hearted — an Air America Pilatus PC-6 Turbo Porter whistles down the 800yd (730m) heavily-sloped runway at LS 20 during the author's visit. The other visiting aircraft are parked in the limited space at the foot of the runway.***

From then on there was no sign of human habitation except the very occasional hilltop village comprised of a few simple Meo huts. Had we continued northwards, only hours later would we have seen "civilisation" again — deep in communist China, having crossed the easternmost foothills of the Himalayas. Suddenly, however, the aircraft banked to port and I could see a small network of jeep roads, a barracks with parade ground and an orderly western-style settlement.

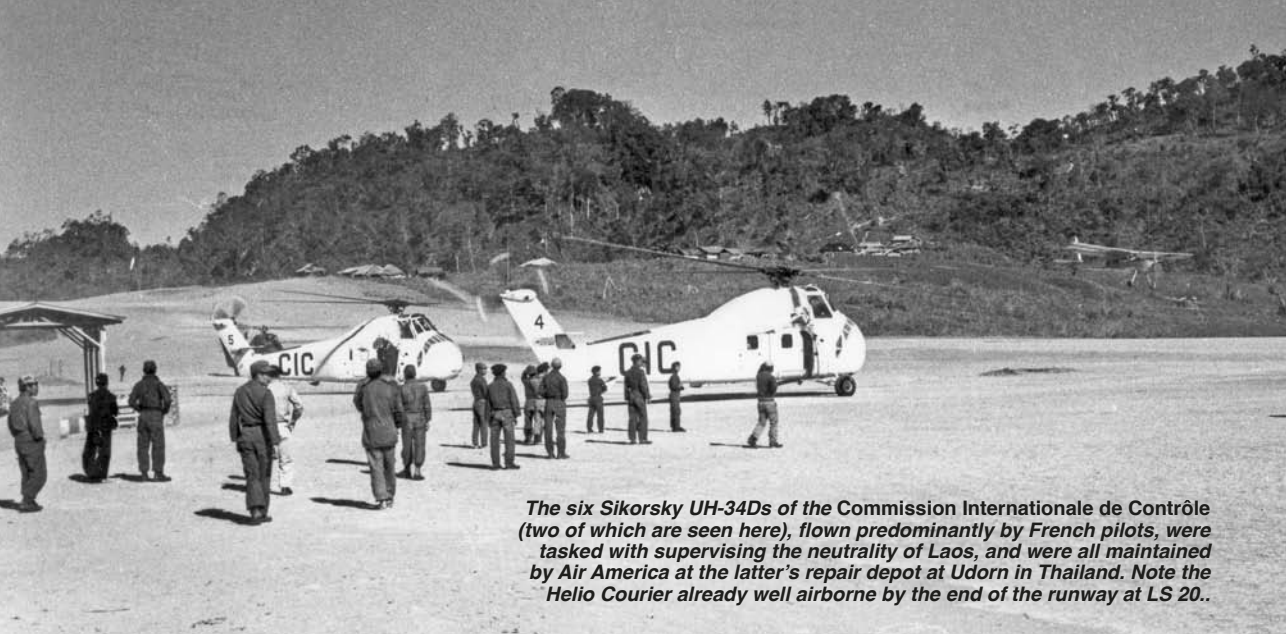
Up on Skyline Ridge

We flew low along a ridge, sending birds aloft, and then turned steeply through 180°. For the first time, LS 20 was visible, an irregular earth scar on a steep slope. The Do 28 touched down and stopped in less than 100yd (90m). We climbed out into the warm dusty air, and watched our taxi take off immediately, leaving the strip almost deserted.

Lima Site 20 was in a large bowl in the mountains, what was known as "Skyline Ridge" prominent to the south-east. A bare patch of earth a few hundred yards across, it was approached over a lip several hundred feet above the valley floor. Beyond the flat area, it continued up a steep slope as a narrow runway. There was a flat turning area at the top.

All buildings were on the south side, as was a large limestone outcrop. While lighter aircraft could land easily on the wide lower level, larger aircraft were committed to touch down at the edge of the lip and run on up the slope, their oleos visibly compressing as the gradient steepened. Full power was applied to avoid running backwards down the slope, which was then negotiated with idle power and heavy braking after turning around on the top platform. This was not a place for faint-hearted pilots — it was very marginal for larger types at 4,000ft elevation, overshooting being precluded by a ridge just beyond the upper end — but landings were great sport to watch.

Additionally, there was always the possibility of communist anti-aircraft machine-guns on the ridge. On August 19, 1969, Pilatus PC-6C N196X of Air America crashed with the loss of



The six Sikorsky UH-34Ds of the* Commission Internationale de Contrôle *(two of which are seen here), flown predominantly by French pilots, were tasked with supervising the neutrality of Laos, and were all maintained by Air America at the latter's repair depot at Udorn in Thailand. Note the Helio Courier already well airborne by the end of the runway at LS 20..

all on board after the pilot was killed by a rifle bullet fired from Skyline Ridge, in this case by a disaffected Meo soldier. While the weather was perfect that January day, I did wonder just how difficult it would be when the monsoon filled the bowl with cloud and turned the strip to mud.

Constructed in 1965 and finally overrun by communist forces on March 19, 1970, Sam Thong/LS 20 became probably the busiest dirt strip in the world at that time. More than 100 landings daily were averaged over the year, 70,000 US gal of fuel being flown in each month. Later, during 1969–70, in the final months before Sam Thong fell, two Lockheed C-130A Hercules —"704" and "605"/56-510 — used the strip at night in addition to Long Tieng and the Mekong valley airfields. Except at Vientiane, their engines were never shut down in case sudden communist shelling made an immediate departure essential.

As I waited, the strip began to fill rapidly with more aircraft; it was a truly eclectic collection. The Air America aircraft mainly left for a further load as soon as they could, dragging themselves up the slope for a take-off downhill, but the other aircraft stayed and were scattered around the edge of the lower plateau. They included de Havilland Canada DHC-2 Beaver F-OAIV, no doubt with the French Ambassador: *l'Armée de l'Air* wisely did not try to get its ambassadorial C-47, 49821/F-SDLR, named *Château de Wattay*, into this strip. The British Embassy's aircraft, Prestwick Pioneer XL665, on loan from No 209 Sqn in Singapore, brought our Ambassador, His Excellency Sir Frederick Warner. Scottish Aviation Twin Pioneer XW-PBP (later damaged beyond repair), formerly registered to Philippine Air Lines, now with CASI, was an unexpected arrival, as was a lone American-registered C-47.

The International Control Commission fielded its three available white Sikorsky UH-34D helicopters, CIC 4, 5 and 6. Air America UH-34D Choctaw "H-F", the last one in Laos still bearing the earlier letter-only codes from 1961, seemed to be resident. Added to these were many Couriers, Turbo Porters, Caribous and Providers of Air America. With all this activity (including reciprocal take-offs on the same narrow strip as the landings) there was no form of control until a pilot sat atop his Courier and used a hand-held radio to establish some order in the chaos.

Interesting as all this was for me, I had to leave soon and proceed towards the arena. Here all were personally met by Touby Lyfong as the senior Meo personage. We were handed an apologies slip from General Vang Pao (*"Le Général de Brigade"*), regretting his inability to greet us as Savang Vatthana, the King of Laos, was his personal guest. If one has to be passed over by *Le Général*, then in favour of the King himself is an acceptable reason.

There was much ceremony that day, mainly military, and good food. The bullfight was just that — two large bulls fighting it out in a gully until one broke away and ran through the closely gathered crowd, hotly pursued by the other. Suddenly, the airstrip seemed the least danger of the day!

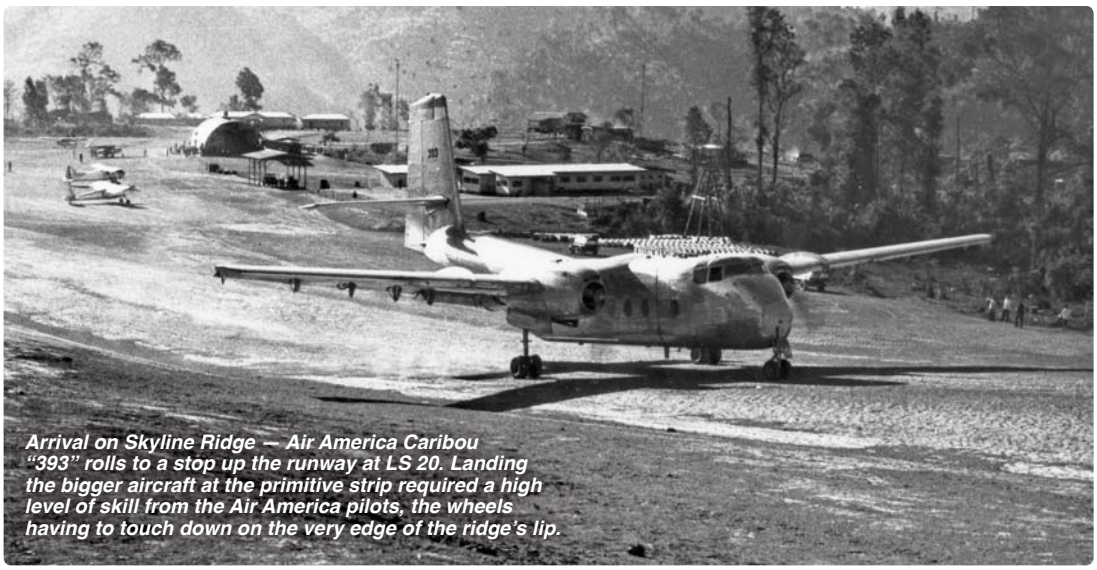
Perhaps too readily, I moved back to the airstrip and faced a tantalising problem: I could choose just one of almost any of the aircraft parked around for my flight back to Vientiane. The C-123 still did not appeal; an engine failure before crossing Skyline Ridge would not be survivable. In the end, I chose Caribou "392". In some ways I came to regret my choice, as some time later I had a flight in the same Caribou on one of Air America's "milk run" scheduled services to the Mekong villages. However, on that day it suited me admirably, clearing the

Another of Air America's stalwarts in Laos was the Fairchild C-123 Provider, which proved invaluable owing to its capacious fuselage and outstanding short take-off and landing capabilities. This example, "655" (originally 54-0655 in USAF service) was photographed by the author at Thakhek West in November 1965.

infamous Skyline Ridge in a sprightly fashion. The view out was good; below, the lone jeep road wound over the ridge and down to "Alternate" at Long Tieng, duly photographed in the distance as I flew back to Vientiane.

The calm before the storm

That day was merely a sop to the world, as represented by the diplomatic staffs of many countries. There was great sadness to follow. The King and his family would later die in a Communist "re-education camp" after the fall of Laos. The Meo people — later known as the Hmong ("Meo"was a pejorative word) — would be hunted off their mountaintop refuges into near-annihilation. They were abandoned by the USA, to the great disgust of the Americans who had recruited, trained and fought alongside them. Author Dr Jane Hamilton-Merritt has written from her own experiences the desperately sad story of the Hmong in her excellent book *Tragic Mountains: The Hmong, the Americans and the Secret Wars for Laos 1942–1992* (Indiana University Press, 1993). Ray S. Cline, Chairman of the United States Global Strategy Council in 1992 and former Deputy Director of Intelligence at the CIA, said in his review of the book that this was "a classical tragedy of heroic proportions . . . not only is it a useful contribution for the benefit of the brave Hmong people, but will also encourage more thoughtful strategic planning in Washington and more compassionate government policy for protecting foreign ethnic groups who perform great service for the USA". So even those at the top finally realised and admitted that they had got it wrong, allowing the Hmong and other ethnic groups to be destroyed and abandoning Laos to its fate.



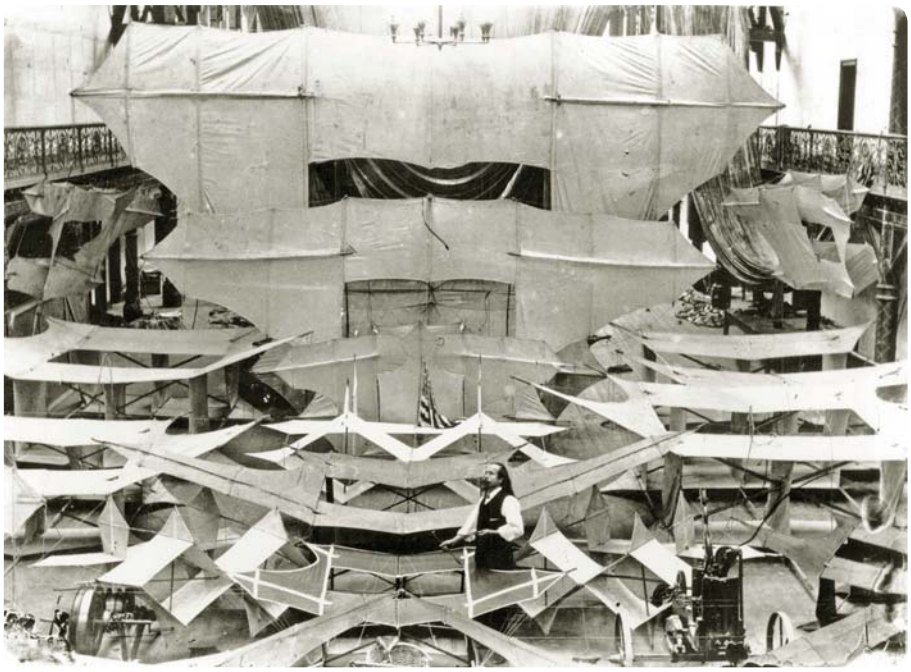
Arrival on Skyline Ridge — Air America Caribou "393" rolls to a stop up the runway at LS 20. Landing the bigger aircraft at the primitive strip required a high level of skill from the Air America pilots, the wheels having to touch down on the very edge of the ridge's lip.

Mr. CODY & Mr. ROE

TWO REMARKABLE MEN

Renowned early aviation specialist PHILIP JARRETT opens a two-part series in which he compares two of Britain's great early pioneers of aviation — their characters and their respective approaches to the problems of powered flight, their achievements and shortcomings, and the subsequent development of their first primitive aircraft

THIS SERIES IS BASED ON A LECTURE PRESENTED TO THE ROYAL AERONAUTICAL SOCIETY ON APRIL 15, 2008



ALL IMAGES VIA AUTHOR

SAMUEL FRANKLIN COWDERY (later self-styled Cody after his "Wild West" hero, Col William Frederick "Buffalo Bill" Cody) was born in Davenport, Iowa, in the USA in 1867, while Alliott Verdon Roe was born in Patricroft, near Manchester, in 1877, so Cody was Roe's senior by some ten years. Cody led the exciting life of a frontiersman, cowboy and Wild West showman before taking up residence in the UK in 1890, where he continued to travel with his Wild West show and Western theatricals. Roe, on the other hand, became a marine engineer and then a draughtsman in the nascent automobile industry.

According to Cody himself, his aeronautical inclinations were fired by a Chinese cook in the USA, who taught him the arcane art of kite building and flying, a fascination that was to combine with his cowboy image to produce one of aviation's most singular pioneers. Roe, like a good number of others who caught the flying "bug", gained his initial inspiration from the observation of seabirds during his various voyages, and began building model gliders. Thus their respective paths to powered flight were quite different, and it is interesting to observe the effects this had on their progress.

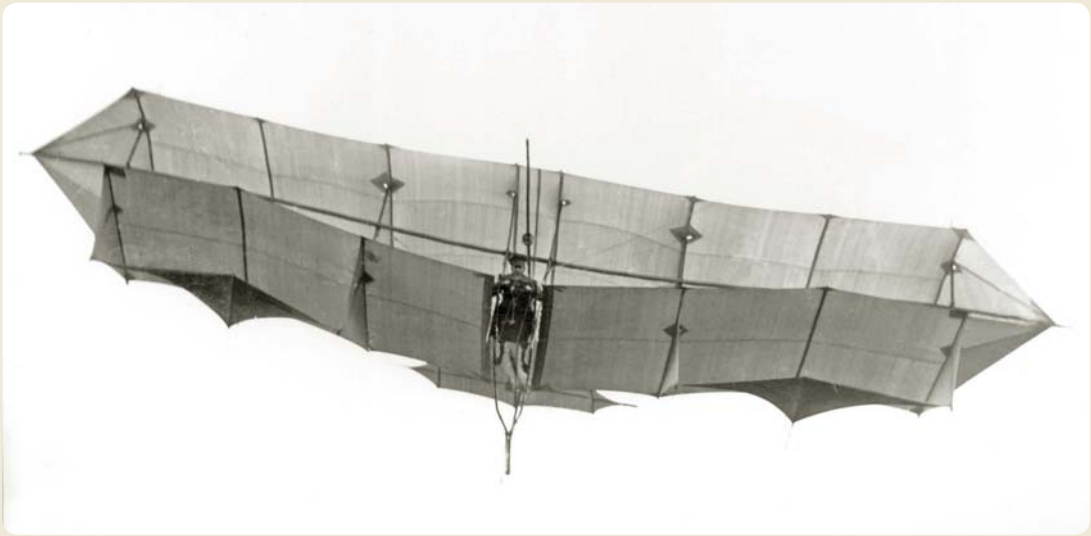
IN THE BEGINNING

Cody developed his kites as a private venture until, by 1899, he had evolved a system using a train of kites that could lift a man. In the autumn of 1901 he first contacted the War Office regarding their potential for military reconnaissance, and that November he patented a man-lifting kite system. Although he lacked formal training as an engineer, Cody seems to have had a genius for mechanical invention and application. He took the boxkite concept conceived by F.H. Wenham and developed by Lawrence Hargrave to another level, achieving unmatched control and stability, and continued to develop and improve his system, adding vestigial wing extensions.

Following acceptance of the patent a year later, and successful military and naval trials, Cody was engaged as Chief Kiting Instructor at the Balloon Factory at Farnborough. His work on the kites entailed investigations into lateral and longitudinal stability which honed skills that would prove useful in the years ahead.

In the summer of 1905 Cody built the Glider Kite, a large lightly-loaded biplane of 51ft (15·5m) span with a pair of ailerons beneath the extremities of its lower wing that were described as "planes that will lift and rise. If one lifts the other descends". As well as being flown as an unmanned kite, it could be sent up with a man lying prone on the lower wing and then released to glide down. After initial trials at the Crystal Palace in South London it was flown at Farnborough in the latter part of the year. Cody said that it "carried eight or ten men up the second day we had it out — all separately naturally". He stated that the longest glide was 750ft (230m) with a drop of 350ft (110m),

OPPOSITE PAGE ***Samuel Franklin Cowdery (above left), popularly known as "Colonel Cody", after the surname he "borrowed" from his Wild West hero, Buffalo Bill Cody; Edwin Alliott Verdon Roe (below right), who never used his first Christian name.*** **THIS PAGE, TOP** ***Cody among a plethora of his kites in his Alexandra Palace workshop.***



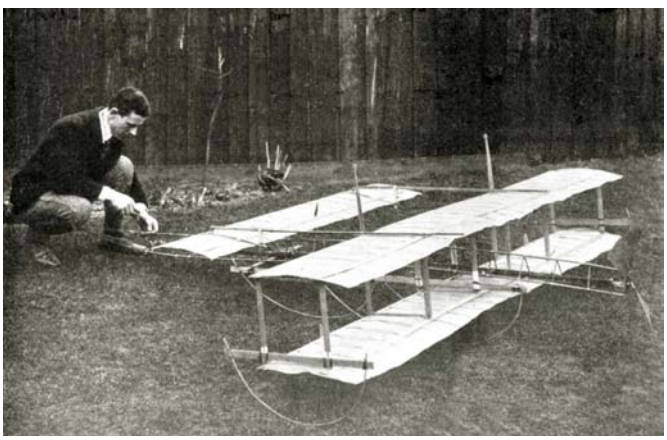
ABOVE ***A soldier samples the delights of Cody's Glider Kite at Farnborough in 1905. The "ailerons" beneath the lower wing extremities are evident.*** **BELOW LEFT** ***Roe with this favourite forward-steering-plane model, powered by twisted strands of rubber.*** **BELOW RIGHT** ***Cody at the model competition at Alexandra Palace in April 1907.***

carrying 1lb (450g) per 3ft² (0·28m²) of wing area, and that the longest glide he made was "80 yards [73m] with the wind" (he weighed 204lb — 93kg).

This enabled Cody not only to experiment with control systems, but to gain initial experience of flying. However, he is self-contradictory about the Glider Kite, saying at one stage that he was "surprised at its success", and on a later occasion that: "This machine was not a success in my opinion, although in the opinion of some people it was a success". The latter judgment might be due to the fact that one of Cody's "sons", Vivian, suffered permanent injury to his back when he crashed it.

ENTER A.V. ROE

Cody's practical work on heavier-than-air craft then lapsed while he worked on the *Nulli Secundus* airship. In the meantime Roe, now 29 and further inspired by reports of the Wright brothers' accomplishments, entered the picture. By early 1906 he was flying a 40in (102cm)-span model closely based on the Wrights' 1902 glider; was reportedly making a similar but much larger one; and had plans to build "a practical motor-driven machine". In March 1906 he exhibited a 6ft (1·8m)-span Wright-type with controllable rudder and wing-warping and an added appendage of his own devising in the form of a large horizontal surface behind the rudder, with marked negative incidence, to impart longitudinal stability. By the time he patented his design for a full-size aeroplane, in November 1906, this surface had become a canard "steering plane" that doubled as an elevator and a warping surface for lateral control. He abandoned the rudder completely as undesirable. Like many early pioneers, he seems to have underestimated the control problem.



ABOVE ***One of the photographs taken by Cody at Alexandra Palace in April 1907, this shows Roe holding aloft his second-prize-winning model aircraft. The steeply sloping ground in the park made it difficult for the judges to determine whether a model was indeed making a sustained flight or merely a descending power-assisted glide.***

In December he wrote: "There is only one way of learning the secret of stability, the all important item of flight, and that is by actual experience". Even so, he was perhaps in too much of a hurry, and failed to evaluate his proposed control system in a manned glider before progressing to a powered machine. He believed his patented two-axis control system was better than that of the Wrights (which, like most pioneers, he evidently did not really understand), and hoped to reap the financial rewards of its universal adoption.

By the end of December 1906 Roe was testing an 8ft 6in (2·6m)-span rubber-powered forward-steering-plane model with a pusher propeller, for which he claimed flights of up to 120ft (37m). By late January 1907 he was building his full-size aeroplane, as well as testing several powered models of differing configurations. He enjoyed some success with two of these at a model competition at Alexandra Palace in North London in April, when a model with twin rear steering planes won him the £75 second prize. His full-size machine, however, was based upon the forward-steering-plane model, which he preferred.

There is an interesting link with Cody here. A photograph of Roe holding up his winning model at Alexandra Palace was taken by Cody. It appears that the American was sufficiently impressed by Roe's models to consider incorporating the steering-plane idea in a full-size aeroplane himself, as undated preliminary design sketches by Cody reveal. Interestingly, the steering planes in one of the drawings have been crossed out, indicating a change of mind!

By the end of August 1907 Roe had completed his 36ft (11m)-span biplane and it was in a shed he had erected alongside the finishing straight at Brooklands in Surrey. He had his sights set on the *Daily Graphic's* offer of £1,000 for the first one-mile flight by a British aviator, and also, rather more optimistically, on the *Daily Mail's* offer of £10,000 for the first flight from London to Manchester.

PROBLEMS TO SOLVE FOR ROE

Unfortunately it was not only in its control system that Roe's machine was deficient. He had failed to understand that most of a wing's lift is generated on its upper surface, believing that lift was wholly created by air pressure on the underside. He therefore covered only the undersurface, leaving the spars and ribs exposed above, seriously compromising the aircraft's aerodynamics. Moreover, he greatly underestimated the power required, fitting an air-cooled 6 h.p. JAP two-cylinder-vee motorcycle engine. He based his estimate on figures produced by Professor Samuel P. Langley in the USA, but, as Octave Chanute pointed out, these related to the lifting surface alone, and did not allow for the added resistance of the framing, motor and pilot. His propeller was of primitive and inefficient fan-type design. He also believed that he had positioned the engine on the aircraft's centre of gravity when stationary, but operation of the steering plane would almost certainly have had a destabilising effect.

By mid-December 1907 Roe was testing his biplane on the Brooklands track, but he quickly found that he had insufficient power to take off. Late in the month he was towed into the air behind motor cars, and claimed that this "cleared up many doubtful points", but the towline would have prevented any true assessment of the

effectiveness (or otherwise) of his control system. He had some difficulty in curbing the drivers' over-enthusiasm, which caused at least one crash.

In March 1908 Roe had to move his shed across to the other side of the track, to the far side of the Paddock, and paint it green to render it less conspicuous. He was seeking a more powerful engine, but continued his trials, experimented with different propeller designs and modified his aeroplane. He eventually negotiated the loan of an 18–24 h.p. Antoinette eight-cylinder-vee watercooled engine until the end of July, and was hoping to win the *Daily Graphic's* £1,000 prize for a one-mile flight. Unfortunately the engine had to come over from France, and, requiring several alterations, was not installed until the end of May.

Although it was three or four times the rated power of the JAP, it was more than three times heavier, and there was the added weight of the radiator and the coolant water. To compensate, Roe increased the wing area by adding small semi-wings between the mainplanes, but this added more weight, of course. The effect of all these changes on the machine's weight distribution, balance and control had yet to be assessed.

Unfortunately Roe was given notice to quit Brooklands by July 17, and in the six weeks from installing the engine until his departure he managed to make only six trials. Although he made some more towed flights, he never succeeded in getting his aircraft off the ground under its own power alone, telling B.F.S. Baden-Powell of the Aeronautical Society in a letter dated July 16, 1908, only that he had "nearly left the ground with present engine". This failure is confirmed by a Mr G.A. Simmons of Addlestone, Surrey, who wrote in a letter to *The Automotor Journal*, dated August 26 and published in the September 5, 1908, issue, that Roe "did not get up quite sufficient speed to rise", and by a statement in the June 1909 issue of *Aeronautics* that: "Owing . . . to insufficient motive power, no actual flights were made". Evidently neither of these writers was aware of the shortcomings of the aircraft itself.

Having dismantled his aeroplane (which he subsequently abandoned), Roe had to find a new site for trials. In the latter part of August he visited Wilbur Wright at Le Mans, France, and was able to examine the Flyer Model A and ask "many questions", although adverse weather deprived him of the chance of witnessing a flight. This, and the appearance of the Voisin-built Goupy triplane in France, led him to design a completely new aircraft, with another patented control system.

IN THE MEANTIME . . .

During these goings-on at Brooklands, Cody had also progressed towards a full-size powered aeroplane. About 1907 he made tentative tests

ROE'S FIRST AEROPLANE

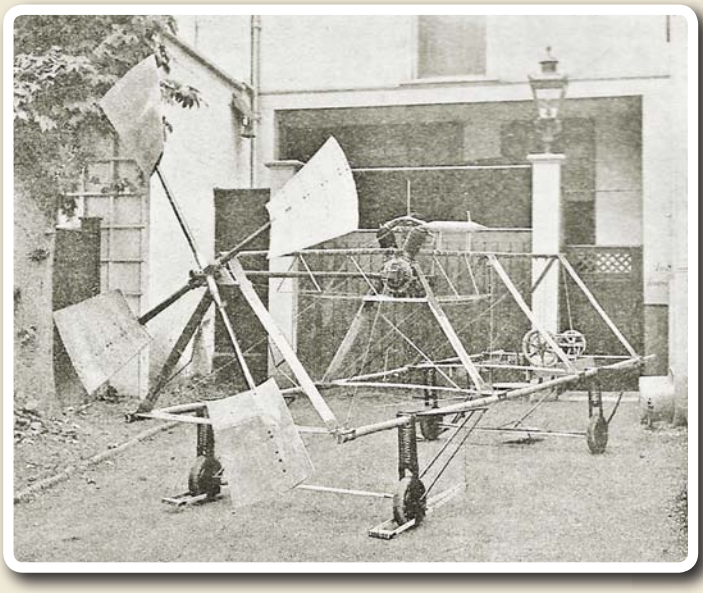
In October 1907 photographs of A.V. Roe's incomplete first man-carrying aeroplane were published in the USA in the popular science magazine *Scientific American*. We take a look at the pictures for the first time in more than a century

THE THREE-QUARTER-rear and three-quarter-front views seen here of the fuselage of A.V. Roe's first aeroplane in the driveway of his brother Dr Spencer Verdon Roe's coach house in Wandsworth, London, shortly after completion in 1907 have not appeared in print since they were published in the October 26, 1907, issue of *Scientific American*. They show the original four-paddle-bladed propeller, the pilot's control wheels of Roe's patented two-axis control system and the sprung four-wheel undercarriage. The magazine's accompanying report stated:

"There will shortly be put to a practical test on the Weybridge motor racing track in England a full-size aeroplane which has been erected by Mr A.V. Roe, the winner of the recent model flying-machine competition held in London. At this exhibition Mr Roe exhibited a model of a man-carrying aeroplane, or rather avroplane, a name coined by its inventor.

"As a result of his experiments with models, Mr Roe has now built, almost entirely with his own hands, a 36ft [11m] man-carrying aeroplane. The machine has been erected in the shed of a private house in Wandsworth, South London, and is now practically completed. It will weigh about 450lb [200kg], including the aeronaut, and have 480ft² [45m²] of surface, or slightly less than 1lb/ft² of supporting surface. It is designed to travel at 40 m.p.h. [64km/h], and should rise at 25 m.p.h. [40km/h]. The motive power is a 6 h.p. engine weighing but 48lb [22kg], or a total average weight of 75lb/h.p. Professor Langley has proved that a 1 h.p. engine can carry 208lb [94kg] through the air at 40 m.p.h., so a 6 h.p. engine should suffice in lifting a 450lb machine and driving it at a good speed. In view of the fact that every man-carrying model which has hitherto flown has required anywhere from 16 to 50 h.p., it is doubtful if any such speed as 40 m.p.h. will be attained.

"The main longitudinal members of the carrying frame of the machine consist of light bamboo. It is 16ft [4·9m] long over all, and about 4ft 6in [1·4m] in height. It runs on four little pneumatic wheels, each 10½in [267mm] in diameter. Above these are large spiral springs to prevent shocks in descent,



LEFT & BELOW ***Unpublished for some 109 years, these two photographs show the completed fuselage of A.V. Roe's first man-carrying aircraft at his brother's house in Wandsworth in 1907. Fitted to the airframe is the four-paddle-bladed propeller, which caused Roe many headaches. In a letter dated April 1, 1908, published in*** **Engineering** ***two days later, Roe explains that his propeller boss was a magnalium casting and the blades were of sheet magnalium, but adds: "Although this metal is slightly lighter than aluminium, and supposed to be nearly as strong as mild steel, my experience with it hardly proves this latter statement".***

and also to keep the machine intact should it strike the ground sharply. It is Mr Roe's belief that many machines which have come to grief in their descent could have been saved if care and judgment had been used in designing the framework. Naturally, it adds to the weight of the apparatus, but it is the designer's contention that a little extra weight is better than risking possible destruction of the machine. A pressure of 150lb [68kg] must be exercised before the various springs are called into play. Every portion of the apparatus is shaped to offer very slight resistance to the air, the frames being made from 3¾in x 5⁄16in [95mm x 8mm] pine.

"The whole is well braced up, and has been tested to withstand more than twice the strain in the air. The steering gear is decidedly ingenious, and is Mr Roe's own invention. In design it resembles an ordinary motorman's wheel, and by it the aeronaut in his seat, in a suspended boatlike chair, can steer the machine. For vertical steering the gear is rocked, which moves the front plane to which the steering gear is attached up and down, and for lateral steering the wheel is turned in the usual way, which raises one side of the front plane while the other is lowered. Hitherto the tilting of a machine to right or left, necessary to keep it balanced in the air, has had to be performed by separate wheels or levers. The propeller is made of steel and magnalium, a metal slightly lighter and much stronger than aluminium. It has a total diameter of 6ft 10in [2m]. There are four blades, but they are detachable, so only two may be used if desired.

"The actual aeroplanes [i.e. wings], which, of course, are not seen in our photograph[s], consist of five open boxes, covered with very light canvas. The two main planes are 36ft [11m] and 30ft [9m] in length respectively by 5ft 4in [1·6m] in width. There is a space of 8ft [2·4m] between the front and rear planes. These aerocurves have hard cutting edges and ribs, the under surfaces being perfectly smooth and free from obstruction of any cross members."

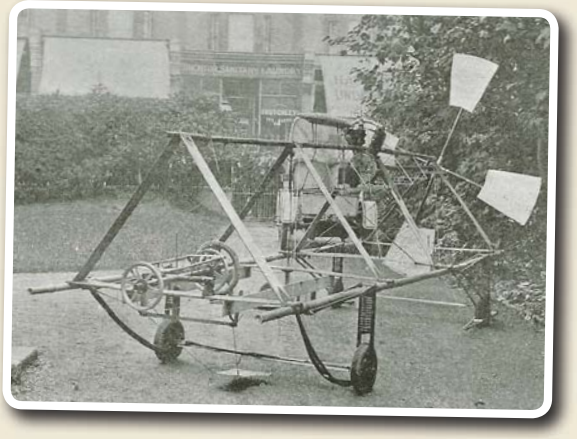
Thus it may be seen that Roe had omitted to include any form of control in yaw, and mistakenly believed that the lift was created by the action of the air on the wing undersurfaces, rather than on their upper surfaces. His optimistic claim that he would attain 40 m.p.h. on 6 h.p. was not unusual for the time, but the magazine's pessimism regarding this aspect was justified, although it was naïvely believed that 6 h.p. would be sufficient for flight. As it proved, the machine failed to fly.

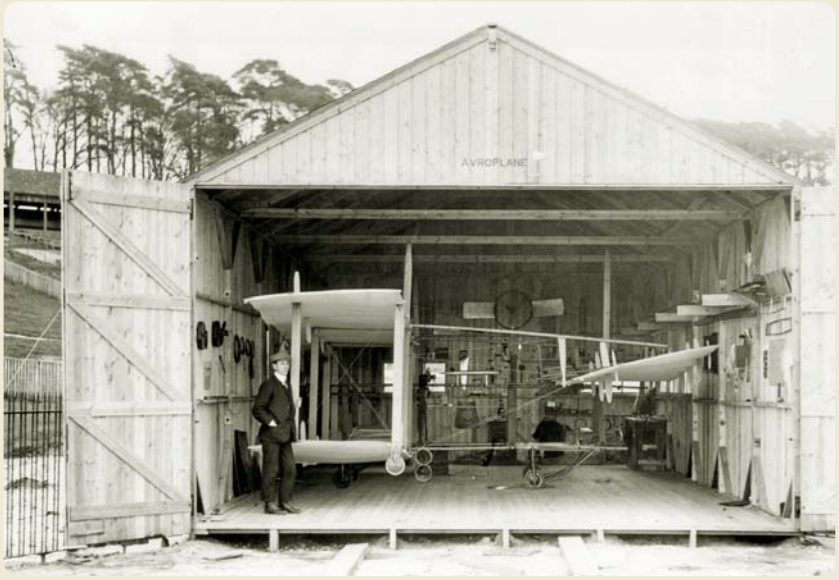
Roe suffered problems with propellers. In a letter to *Engineering* magazine, dated June 10, 1908, and published in the magazine's June 12 issue, he states:

". . . a magnalium propeller boss I used was torn in half at about 1,500 revolutions, in spite of the fact that it had a sectional area many times greater than the two steel tubes that were fitted into it; these tubes carried the blades, which weighed only 2lb [907g] each, including steel tube.

"Since then I have been trying a Sidney Hollands propeller; it is made throughout of steel, and is 6ft 6in [2m] in diameter and only weighs 13lb [6kg]. The total weight of my machine and self is 600lb [270kg], and with an 18–24 h.p. Antoinette, a speed of 25 m.p.h. [40km/h] is obtained in about 50yd run. The Hollands propeller certainly gives an excellent thrust, and is built for speed and strength, and ought easily to stand 2,500 r.p.m., although I only run at about half this speed. It has a knife-like fore-and-aft edge, and is smooth both back and front of blade."

Despite Roe's optimism, by late August he had abandoned the biplane and begun his first triplane. **PJ**





LEFT ***Roe poses with his newly completed biplane in its shed alongside the Brooklands track in late 1907. The aeroplane fitted sideways in its shed, which meant that several men were required to lift it in and out every time a trial was made.***

BELOW ***This photograph of Roe in the biplane pointing down the slope of the "pull-up" at Brooklands suggests that he used the slope to increase the aeroplane's speed during taxying trials with the inadequate 6 h.p. JAP engine.***

of large war kites modified for possible power application, and then built an unpiloted power kite with twin fins instead of the rear box cells, powered by a 12 h.p. Buchet engine. Details of its testing are vague and imprecise, but it was flown as a captive aeroplane inside the Balloon Factory airship shed, travelling along a wire suspended between two tall posts. Cody stated that it was supposed to be let loose, but that "the authorities were afraid I might do some damage by letting it go up in the sky".

During 1907–08 he also tested a Wright-type glider kite. Although Cody tended to play down any Wright influence on his aeroplane, there is no doubt that, through published sources and Colonel Capper, Superintendent of the Balloon Factory, who had visited the Wrights in 1904, he had access to much information on the Wrights' gliders and their first powered aeroplane long before he started work on British Army Aeroplane No 1 (BAA No 1). Later Cody stated: "You will notice the similarity of the Wright machine and mine; not only that, but the curves and system of constructing the curves are precisely alike".

Cody, as an untrained intuitive engineer, always built large, overstrength structures, but when the time came for him to build a man-carrying aeroplane his employment at the Balloon Factory caused even greater demands to be made upon him. When Capper drafted a specification for the Army's first aeroplane in March and April 1908 it was extremely demanding, requiring that a passenger be carried, plus instruments and maps and fuel for a 4hr flight. It was expected to attain 2,000ft (600m) above its starting point, to be able to carry its full load at 5,000ft (1,500m), to have a duration of 2hr and to be able to circle over any desired point, as well as being left in the open for

ABOVE ***Cody's British Army Aeroplane No 1 shortly before it made the celebrated first powered, sustained and controlled flight in the UK. The curious fabric "fantail" extending from the upper wing trailing edge to the top of the rudder was soon done away with; just another of the numerous changes the machine underwent during its protracted period of construction.***

a month "without very material deterioration". As the machine was already under construction, Cody must have been aware of these requirements much earlier.

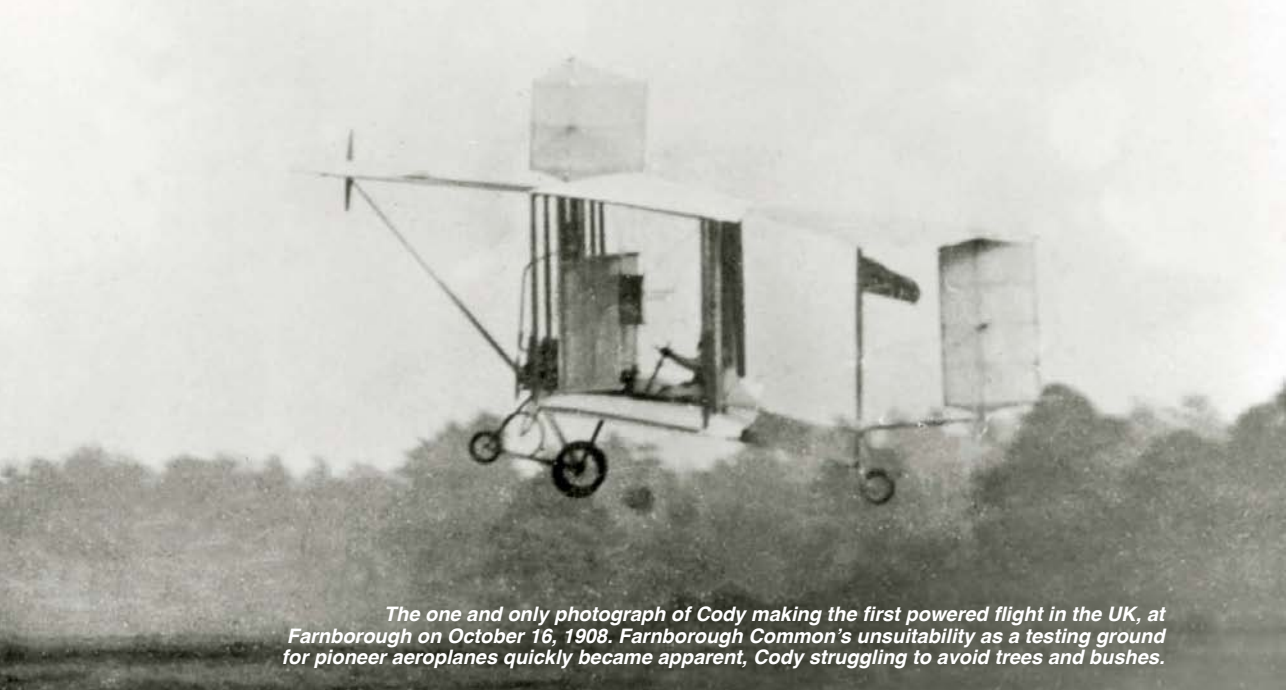
Neither Roe nor Cody had ideal conditions for developing a pioneer powered aeroplane. Roe was always short of funding, and had constant interference from Brooklands' Clerk of the Course, but at least he had a prepared surface on which to run his aircraft (even if he was at the mercy of the wind). Cody, although he had financial backing, was expected to produce a practical military aeroplane virtually from scratch and operate it from very rough terrain.

BRITISH ARMY AEROPLANE No 1

Work on BAA No 1 at Farnborough was slow and protracted, starting late in 1907 and continuing until the late summer of 1908. During this process almost all aspects of the machine underwent numerous changes, but essentially it was a wooden wire-braced biplane with deep gap, with an all-moving canard foreplane and a vertical rudder at the rear. The 50 h.p. Antoinette engine was mounted at the front of the low-set fuselage, while the pilot was seated back by the lower wing trailing edge. A rugged sprung four-wheel undercarriage was fitted, with auxiliary balancing wheels at the wingtips. Two belt-driven counter-rotating two-bladed pusher propellers were positioned outboard, between the upper and lower wings. At the pre-flight stage it had provision for no fewer than three means of exercising lateral control: a rudder above the upper wing, ailerons (linked to the rudder) outboard of the wingtips, and wing warping. There were no foot-operated controls. The pilot actuated all of the control surfaces by means of a control column incorporating a wheel. In addition, Cody provided a screw adjustment that allowed the wing camber to be changed on the ground. The wings were single-surfaced initially, being covered on their top surfaces only, but later the centre sections were double-surfaced.

The engine was not available until the summer of 1908, and Cody's commitment to kite experiments meant that the first trial did not take place until September 19. These continued, interspersed with modifications and adjustments, until the 29th, when a 78yd (71m) "jump" was accomplished, Cody believing that bigger propellers were needed. He then had to return to naval man-lifting kite trials, and it was not until October 13 that the trials of BAA No 1 were resumed. By this time further and substantial modifications had been made, including removal of the wingtip ailerons and repositioning of the radiators. Cody made more jumps on the 14th, covering about 100yd and attaining a height of 10–12ft (3–3·5m).

Deciding that the wing camber was too deep and creating excessive drag, Cody reduced it and made further hops, and he later recalled that two tentative flights were made that day. "I went one flight about 10ft [3m] high and the other one about 12ft [3·5m], and flew 100yd [90m] each time", he said. "I jumped up, but they were only jumps, as I say". The next day was spent giving the aircraft a thorough overhaul and making final adjustments to the wing curvature.



The one and only photograph of Cody making the first powered flight in the UK, at Farnborough on October 16, 1908. Farnborough Common's unsuitability as a testing ground for pioneer aeroplanes quickly became apparent, Cody struggling to avoid trees and bushes.

On Friday October 16, 1908, Cody became the first man to make a controlled and sustained powered aeroplane flight in Great Britain. He began by making two or three circular runs on Farnborough Common to warm up the engine and get the feel of the controls. "I was accused of doing nothing but jumping with my machine," he later said, "so I got a bit agitated and went to fly."

He then began taxying towards the Swan Inn Plateau, and the machine suddenly leapt into the air and flew on to the Plateau, flying uphill for about 75yd (69m). But this was only a foretaste of what was to come. Cody next took his aeroplane to a point in the extreme south-west corner of the grounds of the Officers' Mess. He planned to fly diagonally across the Common in a north-westerly direction, landing in a clear space to the south of the Balloon Factory. There was little scope for error, and the ground was far from ideal for aeroplanes; especially a marginal, untried pioneer machine.

After a very short run, estimated by Cody at 60yd (55m), the biplane took off, passing a clump of trees on the right. An altitude of between 30ft (9m) and 40ft (12m) was reached in less than 100yd (90m), and Cody then flew steadily across Farnborough Common for about a quarter of a mile, according to accounts in *The Times* and *Aeronautics*, in a "beautiful smooth flight".

Unfortunately Cody was drifting off course and veering in a south-westerly direction, influenced by an east-north-easterly wind as he reached the open Common and gained height. Instead of passing to the left of a second clump of trees across the Common, as Cody had intended, the aircraft was now heading directly for it.

Cody had begun his descent, and when he saw the trees ahead he climbed and cleared them by 8ft (2·5m), but encountered severe air disturbance which rolled the aircraft violently. The port wingtip struck the ground very hard, slewing the machine round and causing it to lose height, although Cody did manage to roll it back on to an even keel by use of the "top rudder".

COMPARISONS OF FIRST AIRCRAFT: WRIGHT FLYER I/ROE BIPLANE/BAA No 1

	Wright Flyer I, 1903	Roe biplane, 1907/08	Cody BAA No 1, 1908
Proven bracing system	Yes	No	Yes
Proven control system	Yes	No	Partly
Two-surface wings	Yes	No	Yes
Experienced pilot/s	Yes	No	Partly
Efficient propeller/s	Yes	No	No
Geared-down propeller/s	Yes	No	Yes
Wing section windtunnel-tested	Yes	No	No
Previous manned glider trials	Yes	No	Limited
Towed flight trials	No	Yes	No
Scientific approach	Yes	No	No

ABOVE ***An ignominious end to a glorious event; British Army Aeroplane No 1 following its abrupt descent after losing height while manœuvring to avoid trees and bushes on Farnborough Common. The aircraft never flew again in this form, but underwent substantial modification before it re-emerged some three months later.***

His problems were not over. He now faced yet more trees, and he lacked the necessary altitude to clear them. Turning hard left to prevent a collision, he also managed to avoid a group of tall pines, passing between them and a small clump of bushes. The further loss of height in the second turn allowed the port wing to strike the ground again, and this time recovery was impossible. The aeroplane crashed into the ground and, in Cody's terms, "crumpled up like so much tissue paper . . . and the framework was considerably wrecked".

Thanks to the inherent shock-absorbing qualities of the pioneer aeroplane structure, Cody emerged unscathed. The crash occurred just a little south of what is now the eastern end of Farnborough's main runway. The distance covered in flight was later measured, and found to be 1,390ft (424m). The aircraft was reckoned to have flown at a speed of between 25 and 30 m.p.h. (40–48km/h). Fortunately the engine and propellers escaped damage completely, although the port wings were smashed.

OVERNIGHT FAME FOR CODY

Although Cody had drifted off course in a south-westerly direction, he flew steadily and there was no sign of any control problems. While the Wright brothers had made their first flights over open sandy ground, Cody had to contend with trees, and his attempts to evade these ultimately led to the crash. Doubtless both Cody's inexperience of the lateral control and the system's inherent shortcomings contributed to the flight's unfortunate ending, but, unlike other pioneers, Cody had had to do more than simply keep his machine on an even keel on its first true flight. He had been required to manœuvre to counter adverse winds and avoid obstacles, and had done so with a measure of success. Official reports of the event stressed the need for a better and larger test site.

It was a somewhat ignominious end to the first powered, sustained, and controlled flight in Great Britain, but in spite of the mishap Cody became famous overnight. "I am sorry that the accident occurred," he told *The Times* correspondent, "but I have accomplished what I aimed at. I have constructed a machine which can fly."

Up to this point both Cody and Roe had displayed great perseverance and tenacity; especially Roe, who was working virtually alone, whereas Cody had the resources of the Balloon Factory behind him. But Cody had gathered far more experience of the problems of heavier-than-air flight, having been aloft in man-carrying kites and the Glider Kite, and having made various tests of control systems using these devices and also the power kite. Roe, on the other hand, had attempted to move straight from relatively small models to a full-size powered aircraft, failing to do any more than assess potential control systems by observing the behaviour of his models.

While Cody was evidently aware of the difficulties of devising an effective control system, and devoted some effort to this, Roe does not seem to have regarded this as a serious difficulty, having convinced himself that he had a practical system even before he had begun building a full-size aeroplane.

NEXT TIME *The fates of both remarkable men would be sealed over the next five years, tragically for the charismatic but reckless Cody, and with far-reaching consequences for Roe and the British aircraft industry*

The John Stroud Archive

BEIRUT

Lebanon's PROPLINER PARADISE

In the summer of 1955 freelance aviation journalist John Stroud was invited to sample Air-India's new Super Constellation service from London to Bombay, with a stop at the newly-completed airport at Beirut, the most important air staging post in the Middle East and a thriving hub of propliner activity. Naturally, he had his trusty camera to hand . . .

One of Britain's most respected aviation journalists and authors, John Stroud (born April 3, 1919) joined Imperial Airways aged 14. Six years later he became a freelance aviation writer and in 1963 was appointed General Editor of the Putnam series of aeronautical books. Also a talented photographer, John continued to publish material until his death in March 2007. In 2014 a substantial part of John's archive, including numerous rolls of previously unseen 35mm film, was acquired by A Flying History Ltd and forms the basis of this regular series.

OPPOSITE PAGE ***"Bienvenue au Liban" — Douglas DC-4 OD-ACI of Air Liban is prepared for flight beside the newly completed terminal building at Beirut-Khalde. The French/Lebanese airline had begun DC-4 operations from the airport in late 1954.*** **ABOVE** ***DC-3 JY-ABW was one of five used by Air Jordan, formed in 1950 with Airspeed Consuls to operate services from the Jordanian capital Amman to Jerusalem and Cairo.***

WHEN BRITISH weekly magazine *Flight* asked freelance aviation journalist John Stroud *[no relation! — Ed.]* to pay a visit to Beirut in the summer of 1955 while sampling the Air-India service from London to Bombay, its newly-completed airport — on the Mediterranean shore of the Lebanese capital — was a flourishing hub of propliner activity. It served more than two dozen international and regional airlines and was very much in the process of consolidating its position as the thriving centre of Middle East air transport.

BEIRUT'S EARLY AVIATION YEARS

It had not always been thus — Lebanon's first purpose-built airport was not opened until 1938. From the early 1930s, however, seaplanes operating on the France—Indochina route by French airline Air Orient had alighted in St George Bay on Beirut's northern shore, where passengers would disembark to continue their journey overland to Damascus and on to Saigon by air. By the summer of 1938 the route across the Dodecanese archipelago, held by the Italians, had become hazardous for French aircraft, military or civil. This, combined with the introduction of longer-legged airliners such as the Dewoitine D.338 trimotor, saw the French re-route the Indochina service further south through Libya and Egypt to reach Damascus.

Establishing a suitable location for a land-based airport in the Lebanese capital proved difficult, the local topography being extremely uneven and covered in knotty-rooted olive trees. Lebanon had been mandated to France by the League of Nations in September 1923, and in the mid-1930s the French authorities in Beirut began extending the city's harbour by levelling the extensive sand dunes at Bir Hassan to the south and transporting the sand to the harbour to shore up the new facilities. A welcome result was a level area close to the shore south of the city, cleared of trees and perfect for the capital's long-awaited airport.

Construction began at Bir Hassan in 1936 on

ABOVE ***With the Lebanon Mountains rising to the east in the background, Middle East Airlines DC-3 OD-ABD has its engines run up on the ramp before departing the newly-completed airport at Khalde, south of the capital's centre. Parked in the distance are DC-3 OD-AAM and Languedoc OD-ABJ of Air Liban and a USAF C-54 Skymaster.***

three runways, one 2,700ft (825m) long and two of 2,770ft (845m), plus a terminal, control tower and hangar, the new airport opening in late 1938.

The airport quickly became an important stop on many of the routes of the pre-war pioneer airlines, including Polish airline LOT's Warsaw—Tehran service and Lufthansa's service from Berlin to the Iranian capital. Air France also re-routed its Indochina service back through Beirut again for its Hanoi service. At the height of its pre-war operations, the airport at Bir Hassan was seeing more than 30 airliner movements a day, considerably more than originally envisaged. The danger of over-expansion would soon cease to be a threat, however, with the outbreak of war in September 1939, France having to concentrate its efforts on the impending German invasion back home in Europe.

POST-WAR PROSPERITY

In the wake of the German occupation of France in 1940, the pro-Nazi French Vichy government established control of Lebanon, although Operation *Exporter*, undertaken during June—July 1941, saw the country returned to Allied hands. In November 1943 it was declared that Lebanon would become independent under the Free French government, although the Allies continued to occupy the strategically important region until the end of the war.

With the war over, Lebanon looked to the future as an independent nation and quickly set about establishing its own national and international air networks. Indeed, a reliable and modern transport system was vital for the development of the young republic's economy, and in 1945 Lebanon's first and biggest commercial aviation enterprise, Middle East Airlines (MEA), was established by Lebanese nationals Saeb Salaam and Fawzi El-Hoss at Bir Hassan. Three de Havilland D.H.89 Dragon Rapides opened MEA services to Cyprus, Iraq, Egypt and Syria in January 1946, with more economical DC-3s taking over that summer.

Also established in 1945 was *Compagnie Générale de Transports* (CGT), also based at Bir Hassan. With 60 per cent of the company owned by Air France and the remainder held by Lebanese private interests, CGT began operations to Damascus, Jerusalem, Baghdad and Cairo with a fleet of Junkers Ju 52/3ms and, later, SNCASE SE-161 Languedocs provided by the French national airline. By 1948 the company was ranging as far afield as Senegal and Nigeria in West Africa, and in 1951 the airline was renamed *Lignes Aérienne Libanaises*, or Air Liban.

By the late 1940s the Middle East was becoming an increasingly important economic centre, with the discovery of vast mineral fields in the region attracting investment on an enormous scale from all over the world. The prospect of vast profits

ABOVE ***Lockheed L-749A Constellation F-BAZF beneath the control tower at Beirut. Curiously, the "Bienvenue au Liban/Welcome to Lebanon" legend that ran along the front of the terminal building is missing, suggesting that John returned to Beirut later in 1955 or 1956 to take more photos, some of which are also seen on these pages.***

to be made from the mining of crude oil quickly became a significant factor in the economies of Europe and North America. The epicentre of these precious mineral deposits was the Persian Gulf, the main fields being in Saudi Arabia, Iran, Kuwait, Iraq, Bahrain and Trucial Oman. With the establishment of thousands of oil wells, refineries and port installations came the influx of tens of thousands of foreign technicians and specialists, producing considerable air traffic in a region where ground-based transport was difficult, if not non-existent. Located in a strategically favourable position on the shores of the Mediterranean, Beirut quickly became a nexus for air transport in the Middle East, with newly established airlines from Lebanon's neighbours becoming regular visitors to Bir Hassan, which was rapidly becoming overwhelmed by the vast increase in air traffic.

A NEW AIRPORT FOR BEIRUT

By the late 1940s it was clear that Bir Hassan could no longer meet post-war requirements, so the search for a suitable site to house a larger and more modern airport to serve the capital began. Khalde, further south than Bir Hassan, on the Beirut—Saida road, was eventually chosen, work beginning in 1950. One 5,905ft (1,800m) runway was opened on September 1 that year, and the airport was officially declared open, after the construction of two much longer runways, on April 23, 1954.

Beirut's strategic location as a key transit point in the Middle East made it no stranger to regular exotic visitors, including this Ilyushin Il-14 from the Soviet Union. Rather more workaday is the Kuwait Oil Co Ltd Vickers Viking beside it, G-AGRU (c/n 112), still extant today and on display at Brooklands Museum, near Weybridge in Surrey.

ABOVE ***Another regular visitor to Beirut was the Arabian-American Oil Company (Aramco), whose C-54B N711A,*** **The Flying Oryx,** ***is seen here en route to Saudi Arabia, where the company operated the world's biggest offshore oil field at Safaniya. The names*** **Flying Oryx, Gazelle** ***and*** **Camel** ***were used by various Aramco DC-4s and DC-6s.***

ABOVE ***With the Mediterranean sparkling in the background, passengers board Misrair Viking SU-AGN (c/n 196) for a flight to Cairo. The aircraft had originally seen service with Danish airline DDL (which became part of SAS) before being sold to Misrair in September 1949. Sadly, it crashed at Menzalah Lake in Egypt on March 7, 1958.***

Within a year the new airport had established itself as the single most important air transport hub in the Middle East, and by the time of John's first visit in the summer of 1955 it had become one of the busiest staging posts in the world, with an increasing number of international long-haul carriers operating alongside the plethora of regional airlines.

The most significant foreign influence at Beirut in the mid-1950s was the British Overseas Airways Corporation (BOAC), which had a financial interest in many of the regional airlines operating through the Lebanese capital, including Aden Airways, Arab Airways, British International Airways, Gulf Aviation and MEA (BOAC had bought a 48 per cent stake in the latter in March 1955). With support from British company Hunting-Clan and British European Airways (BEA), those regional operators were incorporated into a holding company established by BOAC in 1955 and named Associated British Airlines (Middle East) Ltd (ABAMEL), which represented BOAC investments of some £1·2 million in the Middle East airline system. Also established by BOAC at Beirut around the same time was the Mideast Aircraft Service Company (MASCO), a repair organisation created from MEA's engineering department.

Such was the situation when John flew in to the Lebanese capital in the summer of 1955 in an Air-India Lockheed Super Constellation, on the airline's inaugural service from London to Bombay via Düsseldorf, Zürich and Beirut. Other international airlines using the newly-completed airport included KLM, Air France, Pan Am, Qantas, Sabena, JAT, Swissair, UAT and Air Vietnam, which, when added to the dozens of regional airlines also passing through, made for an exotic-airline enthusiast's dream.

PROPLINERS GALORE!

With the commercial jet age still very much in its infancy, Beirut was a hive of propliner activity at the time, most of the regional operators relying on small fleets of eternally dependable Douglas DC-3s and ageing Vickers Vikings, although John noted in his report for *Flight* of August 12, 1955, that Saudi Arabian Airlines was operating Convair 340s, DC-4s and Bristol Freighters, and that Languedocs of both Egyptian airline Misrair and Air Liban were regular visitors too.

Ever the enthusiastic photographer, John took advantage of the opportunities afforded by French architect André Leconte's light, spacious terminal, which incorporated a spotter-friendly terrace on the roof beside the integral control tower. Commanding majestic views westwards across the apron and towards the Mediterranean Sea just beyond the airport, the terrace was the perfect spot to take numerous rolls of film of the

Along with MEA, Air Liban and Trans Mediterranean Airlines, Lebanon's fourth carrier, Lebanese International Airways, also operated out of Beirut with Curtiss C-46s in a passenger/freight configuration. This example, OD-ACK (originally 42-96587 in USAF service) crashed into the sea on take-off from Beirut on March 10, 1957.

ABOVE ***According to several sources Fiat G.212 trimotor G-ANOE, of short-lived Kuwaiti operator Arabian Desert Airlines, was damaged beyond repair in a landing accident at Kuwait Airport on July 29, 1954. However, John took a photo of it in fine fettle at Beirut in the summer of 1955, even making special mention of it in his report for*** **Flight.**

bustling air centre, with passengers being led out to their awaiting machines below and propliners of all kinds undergoing maintenance in the hangars a few hundred yards to the north, also clearly visible from the terminal.

A VERITABLE VALHALLA

At the time of John's visit in 1955, Air Liban had recently acquired a pair of DC-4s, which triggered a rush to improve the fleets of several of the bigger regional airlines. Clearly feeling the competition, MEA swiftly prevailed on its ABAMEL partner BOAC to provide aircraft that could offer similar or better passenger loads and economy, and in April 1955 a pair of pressurised Handley Page Hermes 4s, flown by Skyways crews, was put on the same routes as Air Liban's DC-4s. John also reported that Kuwait Airways had added a Hermes on its Kuwait—Beirut—Cairo route.

The year 1955 was a significant one in airline operations at Beirut, partly owing to the establishment of ABAMEL and MASCO, but also as it marked the beginning of the transition from piston power to turboprops in the region. By the end of the year MEA had leased three turboprop-powered Vickers Viscounts from Hunting-Clan, with Iraqi Airways and Misrair also receiving Viscounts during 1955–56. There was a concerted effort to make the Middle East a Viscount-dominated area, with MASCO offering full servicing and overhaul facilities for the type.

During John's visit, however, Beirut was still very much a hub of classic propliner activity, with many of the airlines overlapping each other on the busier routes. Competition was fierce, with the routes from Beirut to Baghdad and Kuwait being operated by three of the 11 Middle-East-based regional carriers, with five of those 11 operating

Parked out by the bushes opposite the terminal, Avro York EP-ADA of Persian Air Services (PAS) awaits further maintenance on its No 2 Rolls-Royce Merlin engine. With technical assistance from British company Skyways, PAS operated a service to Europe and later became part of IranAir. York EP-ADA was damaged beyond repair during a forced landing owing to engine failure near Basra in September 1955.

ABOVE ***Aryana Afghan Airlines was formed in 1955 by the Afghan government with assistance from the Indamer Company of India, which was bought out by Pan Am in 1957. Behind the DC-3 is Avro Tudor 4B "Super Trader" G-AHNI*** **Trade Wind** ***of Trans Arabia Airways, lost over the Turkish-Soviet border in 1959 — see*** **III Wind** ***in*** **TAH2.**

a regular Beirut—Jerusalem service. Inefficient it may have been, but for a keen photographer and journalist like John it was a veritable Valhalla.

In his subsequent report for *Flight* John noted that much of the air traffic at Beirut was for business, with most of it centred on the oil districts. "There is a lot of tourist traffic too, with more developing," he explained, "and the pilgrim traffic is vast. The Holy Land brings many tourists, but it is the Muslim traffic to Jeddah — for Mecca — which presents the local airlines with problems". He continued:

"Recently the demand for transport to Jeddah was of such proportions that the USAF came to the rescue of the local carriers and transported large numbers of pilgrims". He went on to relate how Saudi Arabia had been forced to address the problem of pilgrims spending all their money to get to Mecca, then becoming stranded. This was circumvented by stipulating that all tickets to Jeddah must be for return journeys.

With camera in hand, John was given free access to the new airport and captured the gathered exotica on the ramp, including an ageing Fiat G.212 trimotor of Arabian Desert Airlines, and an Iranian-registered Avro York in Skyways colours bearing Persian Air Services titles.

With hundreds of photographs on numerous rolls of film safely tucked away in his flight bag, John boarded the Air-India Super Connie at Beirut to continue his journey to Bombay. Happily for us, the film rolls have survived six decades and we can still enjoy the fruits of a day well spent at Lebanon's propliner paradise. **NS**

ACKNOWLEDGMENTS *The Editor would like to thank Colin Higgs and Jo Ware at A Flying History Ltd (www.aflyinghistory.com) for their help with this regular series*

By the end of 1955 the turboprop-powered Vickers Viscounts supplied to MEA by MASCO were operating services from Beirut to Europe. Viscount 732 OD-ACF was originally G-ANRR in Hunting-Clan service and operated with MEA from September 1955 to September 1957, when it was returned to Hunting-Clan.

BUNNY POWER!

US NAVY EVALUATION UNIT VX-4 AND ITS ALL-BLACK FLAGSHIP *VANDY 1*

In our first issue we told the full story of Hugh Hefner's midnight-black DC-9, emblazoned with the distinctive rabbit's-head logo of his Playboy empire. It was, however, not the only jet to wear the bow-tied bunny. DAVID G. POWERS explores the history of US Navy squadron VX-4, whose all-black bunny-finned F-4 Phantoms and F-14 Tomcats became, with Hef's blessing, icons of West Coast US Navy aviation

ALL IMAGES NATIONAL NAVAL AVIATION MUSEUM UNLESS OTHERWISE STATED

ABOVE LEFT *The original all-black* **Vandy 1**, *McDonnell Douglas F-4J BuNo 153783, awaits its next mission on the VX-4 flightline — complete with bunny logo on the fin — at Naval Air Station (NAS) Point Mugu, California.* **ABOVE RIGHT** *Same callsign, different type; Grumman F-14A Tomcat BuNo 159853 shows off its sleek lines during a VX-4 deployment to NAS Key West in Florida in 1990.*

THE FIRST ITERATION of the US Navy's VX-4 (VX denoting Air Development Squadron) was established on May 15, 1946, when bomber unit VPB-101 (VPB — Patrol Bombing Squadron), based at Naval Air Station (NAS) New York (Floyd Bennett Field), was redesignated. The unit could trace its history, under various squadron designations, back to VP-11F (VP — Patrol Squadron), established on July 1, 1936. The primary mission of the newly-minted VX-4 was the test and evaluation of new airborne radar warning systems, mainly flying large multi-engined patrol aircraft.

On September 14, 1946, the unit chalked up a first in aviation history when a VX-4 crew flew a Boeing PB-1W (B-17G) Flying Fortress on what is considered the first "hurricane hunter" mission, using airborne radar to track a severe storm. Some references indicate that this first iteration of VX-4 was designated as an Airborne Early Warning Development Squadron, but while this may have been an accurate description of the squadron's mission, most US Navy historical documents do not list the unit as such.

Four days later VX-4 moved north to NAS Quonset Point, Rhode Island, before moving again to NAS Patuxent River, Maryland, in 1951. With a dearth of assigned projects, Navy planners took the decision to disband the unit and redesignate it as VW-2 (VW — Air Early Warning Squadron) on June 18, 1952.

THE EVALUATORS AND *VANDY*

The second iteration of VX-4 — again designated an Air Development Squadron — was formed on September 15, 1952, under the command of Cdr (later Rear Admiral) James G. Sliney, based at Headquarters Pacific Missile Range, NAS Point Mugu, California. The unit's primary mission was the testing and evaluation of air-to-air and air-to-ground guided missiles. Projects undertaken included trials of the AIM-7 Sparrow air-to-air missile (AAM) in 1953, air-to-ground AGM-12 Bullpup (1957) and AIM-9 Sidewinder AAM (1960), with emphasis placed on operational usage of the new missile system. Data on tactics,

ABOVE ***Originally tasked with the evaluation of airborne early warning systems, VX-4 initially operated Boeing PB-1Ws, including this example, BuNo 77230, photographed during a test flight circa 1946. Built as a B-17G, it was on strength with the USAAF as 44-83862 when it was transferred with 20 others to the US Navy and redesignated.***

techniques and procedures gleaned from testing was promulgated and distributed to front-line fleet squadrons.

On March 1, 1960, air development unit VX-3, based at NAS Atlantic City, New Jersey, was disbanded, and many of the missions flown by this squadron were transferred out west to VX-4, greatly expanding the latter's mission portfolio well beyond guided missiles. The testing of systems such as terrain-following radar and Doppler navigation units were now part of VX-4's remit. Indeed, the unit's duties evolved to include the testing of aircraft as a total weapons system, rather than just the airframe, missile or electronic equipment. One such complete weapons system was the new McDonnell F4H Phantom II. Aviators assigned to VX-4 began flying the new type in August 1961 with the arrival of the F4H-1F, and a few months later the F4H-1. (In September 1962 the F4H designation was changed under Department of Defense mandate to the more familiar F-4.)

On January 1, 1969, the VX component of the unit's designation was changed to Air Test and Evaluation Squadron. The unit was nicknamed "The Evaluators", and for years had been using the callsign *Vandy*, which, according to VX-4 corporate knowledge, was a nod to Vanderbilt University in Nashville, Tennessee, the *alma mater* of a former Commanding Officer. Each aircraft was assigned a side number, a modex of sorts, and this, combined with *Vandy*, became the aircraft's callsign — *Vandy 1*, *Vandy 2* and so on. This made it easier for the operations staff to keep track of individual aircraft.

A degree of mystery still attaches to the exact origin of the *Vandy* callsign, however. Most people, indeed some Navy veterans who were in VX-4, ascribe its origin to the above-mentioned reference to Vanderbilt University. An alternative theory reaches further back to the original VX-4 of 1946, which had the squadron nickname "The Vanguards", which was perhaps simply shortened to *Vandy*. Some sources

Another of the batch of 20 B-17Gs transferred to the US Navy and operated by VX-4 was PB-1W BuNo 77233, seen here at NAS Glenview, Illinois, in August 1950. The W in the PB-1W designation denoted the anti-submarine role, for which a large radome was fitted beneath the fuselage to accommodate the APS-20 search radar equipment.

ABOVE ***A trio of VX-4 Phantoms in standard fleet colours in mid-1970. Nearest the camera is* Vandy 6, *F-4J BuNo 155896, beyond which is* Vandy 1, *F-4B BuNo 151439, and flying lead is* Vandy 5, *F-4B BuNo 150440. In the 1950s the unit flew trials with various types including the Cutlass, Skyknight, FJ Fury, Skyhawk, Demon and Crusader.***

indicate that the second iteration of VX-4 was initially also called The Vanguards, although most lean towards the more familiar, and more appropriate, Evaluators name.

Regarding this last assumption, in the mid- to late 1940s the land-based air early warning community was in almost constant flux, with squadrons and their detachments being established, redesignated, and disbanded seemingly on an almost monthly basis. In February 1950 VX-4 established a West Coast detachment at Naval Auxiliary Air Station (NAAS) Miramar, California, equipped with three PB-1Ws inherited from the disbanded VP-51. Shortly afterwards, however, the VX-4 detachment was also closed down, and the aircraft transferred to a detachment of VC-11 (VC — Composite Squadron). On June 18, 1952 (the same day VW-2 was established), the VC-11 detachment was spun off to form the nucleus of the new VW-1, which had the nickname The Vanguards. Mystery solved? Perhaps not, but it may have some bearing on the provenance of the callsign *Vandy*.

INTO THE BLACK

In 1969 VX-4 conducted a test programme concerning various paint schemes and colours. The chief intention was to evaluate the reflectivity of a given paint and its effect on visual acuity under varying light conditions. An ancillary goal of the test was also to evaluate the corrosion-protection properties of the paint. The overall outcome of these tests could have an influence on the paint schemes applied to aircraft then being deployed on tactical missions in the operational hotbed of South-east Asia.

One such test colour was basic glossy black, and this was applied to McDonnell Douglas (McDonnell and Douglas merged in April 1967) F-4J Phantom BuNo 153783, at that time flying under the callsign *Vandy 9*. According to a Navy photographer who flew on these evaluation hops, a typical test mission would require *Vandy 9* to fly a series of large circles, so that the sun was striking the airframe at a continuously changing angle. The chase aircraft, usually another Phantom, would follow at varying distances and relative altitudes, with the photographer in the rear seat taking a series of photographs and motion pictures of the all-black aircraft. Then it was back to the photo-analysis lab for processing and evaluation. Ultimately, the overall gloss-black paint scheme was not adopted and the test programme came to an end. The black Phantom, however, would go on to achieve iconic status.

There is much lore and legend about why the higher-ups at VX-4 decided to keep this single Phantom airframe in the distinctive gloss-black scheme, although detailed squadron records throw little light on any official reason; after all, the tactical testing was complete. An overwhelming number of former squadron alumni, however, state that the reason they kept the Phantom in the black scheme was that it just looked so good, which proved to be a great morale-booster. An all-black Phantom evoked great pride within the squadron, so much so that in 1971 it was decided that, regardless of BuNo, whichever F-4 airframe wore the black paint scheme would become the flagship of VX-4 and be given the callsign *Vandy 1*.

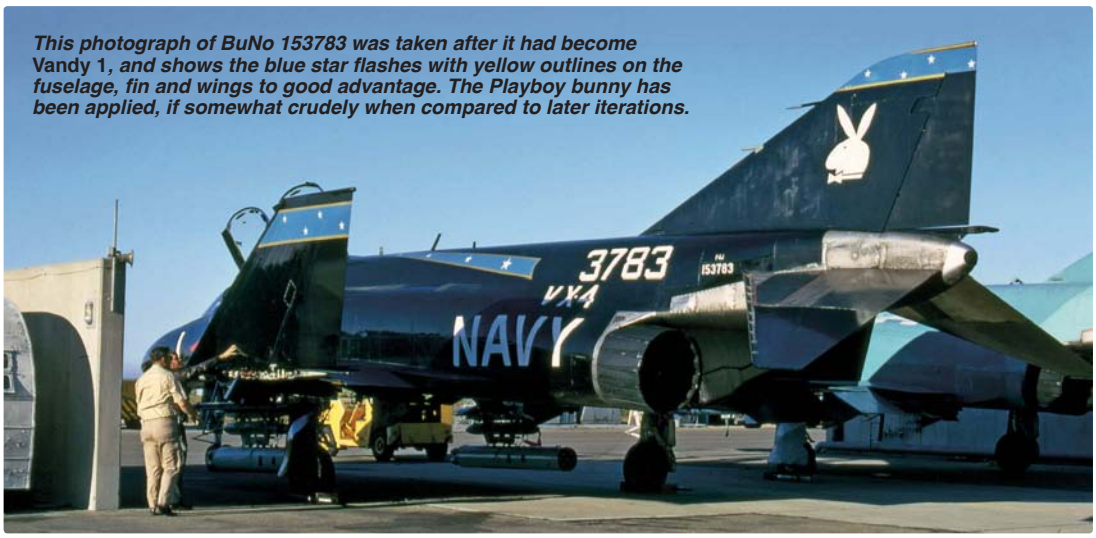
In 1969 another one-off all-black aircraft

ABOVE ***The new black — F-4J BuNo 153783, callsign*** **Vandy 9,** ***was the first of the VX-4 Phantoms to be painted in an overall gloss-black colour scheme, for visibility trials in 1969. It is seen here beside Hangar One at NAS Moffett Field, California, in October 1969 with blue star flashes on fin and fuselage and the unit's "XF" tail codes on the fin.***

began to be seen at airports around the USA. Hugh Hefner, the founder of *Playboy* magazine, acquired Douglas DC-9-32 N950PB, and had it equipped as a flying penthouse, complete with cocktail lounge, discotheque and private suite. The airframe was painted an overall gloss black and adorned with the publisher's logo — Art Paul's classic bow-tied white bunny's head — on the fin. Officially called The Big Bunny, the aircraft was also known as "Hare Force One". *[For the full story, see* Hef and The Big Bunny *in* TAH1 *— Ed.]*

Meanwhile, at VX-4, with the all-black *Vandy 1* as the designated flagship of the squadron, a suggestion was made that it would look even better with the white bunny logo emblazoned on the fin, *à la* Hef's DC-9. Again, lore and legend creep into the story as to exactly who made this decision, but from 1971 the bunny logo was applied to *Vandy 1*. Some former VX-4 alumni suggest that the logo first appeared simply as a visual gag. What is definitely true is that the squadron contacted Hefner for permission to use his emblem; and, in a letter back to VX-4, he granted the unit the right to use it, reportedly for as long as it wanted to. Hence, the bunny appeared not only on *Vandy 1*, but also on many other aircraft in the squadron. As a semi-official emblem of VX-4, the rabbit's head logo also began to be seen on squadron patches, nametags, stickers and shirts etc.

As previously mentioned, the first all-black Phantom was BuNo 153783, without the bunny logo but with the squadron's standard blue



This photograph of BuNo 153783 was taken after it had become **Vandy 1,** ***and shows the blue star flashes with yellow outlines on the fuselage, fin and wings to good advantage. The Playboy bunny has been applied, if somewhat crudely when compared to later iterations.***

ABOVE ***Any colour as long as it's black. Or white. In May 1977 VX-4 F-4J BuNo 158350 — Vandy 5 — was painted in an experimental all-over white colour scheme with low-visibility titles, codes — and bunny. By this time the rabbit was being applied to many of VX-4's F-4s, and this example was inevitably dubbed "The White Bunny".***

flashes with white stars on the fuselage and similar bands on the wingtips and fin. Over the next two decades there would usually be a single gloss-black, bunny-adorned Phantom on strength with VX-4. Testing programmes, however, occasionally dictated that even the popular *Vandy 1* appear in something other than black. In November 1978, for example, *Vandy 1* was used to test a prospective overall glossy grey paint scheme. In the summer of 1982 a glossy black *Vandy 1* returned, this time in the form of F-4S BuNo 155539. (There were no new-build F-4S models; all such variants were simply upgraded from existing F-4J models.)

All US Navy Phantoms based on the West Coast were overhauled at the Naval Air Rework Facility (NARF) at NAS North Island, near San Diego, including those of VX-4. As the outgoing *Vandy 1* was readied for its trip to the NARF, another airframe would be painted in the distinctive all-black scheme. Phantoms known to have served as *Vandy 1* include F-4J BuNo 153783, F-4S BuNo 155539, F-4S BuNo 155750 and F-4S BuNo 158358. Finally, F-4S BuNo 158360, which arrived in March 1989 to become not only the last black *Vandy 1* Phantom, but also the last F-4S in service with an operational US Navy squadron. It was retired in January 1990.

As an aside, the Pacific Missile Test Center, also located at NAS Point Mugu, retired the last F-4J, BuNo 153074, callsign *Bloodhound 90*, the same year. All remaining operational Phantoms in US Navy service were QF-4N or QF-4S/4S+ drones. It is also worth noting that in 1990 there were

Crew members of VX-4 walk out to a pair of all-black F-4S Phantoms at Point Mugu for another mission. Both Phantoms — BuNo 158360 (nearest) and BuNo 158358 (Vandy 1) — are wearing the bunny logo on their fins, so it is possible that 158358 was shortly to be delivered to the NARF at North Island, with 158360 painted black and "bunnied" to take over the Vandy 1 mantle.

ABOVE ***Meet the new kid on the block — on October 20, 1987, F-4S BuNo 158358 was photographed with F-14A Tomcat BuNo 161444, both adorned with bunnies and in the colours of* Vandy 1*. The Tomcat had been painted in an all-over matt black scheme with blue fin flashes with stars and red outlines for that year's Point Mugu airshow.***

three US Marine Corps Phantom squadrons, one on active duty and two reserve units. Their days flying the Phantom, however, were also drawing to a close.

HELLO BLACK 'CAT; GOODBYE BUNNY

Well before the retirement of the hardworking F-4 Phantom, VX-4 began flying the latest fighter to join the fleet — the Grumman F-14A Tomcat, which the unit brought on strength in October 1972 for operational evaluation of the airframe and the AWG-9/AIM-54 Phoenix air-to-air missile system. Again, the complete weapons-system approach was used. The first all-black Tomcat, F-14A BuNo 161287, callsign *Vandy 01*, was painted in an overall matt-black scheme in August 1985, complete with the bunny logo, for the filming of a documentary. The water-based paint used was not durable and was removed after only two weeks.

Another early black Tomcat was F-14A BuNo 161444, which sported matt paint and the proper *Vandy 1* callsign. This Tomcat was painted, again with water-based paint, for the 1987 Point Mugu Air Show, as a static display aircraft. It was then flown for a one-off photographic flight in formation with the other *Vandy 1*, an F-4S Phantom. After this flight the Tomcat was stripped of its black livery.

With the retirement of its last F-4S Phantom in January 1990, VX-4 began to cast around for another flagship *Vandy 1*, and many nodded toward a McDonnell Douglas F/A-18 Hornet. Not to be usurped, the Grumman management quickly offered to paint a Tomcat, and as a result F-14A BuNo 159853 became the new *Vandy 1*. It was accepted by Commanding Officer Capt F.G. Ludwig Jr on April 10, 1990, and flew as *Vandy 1* until it was retired in 1992, after which there would be no black *Vandy 1* for some time.

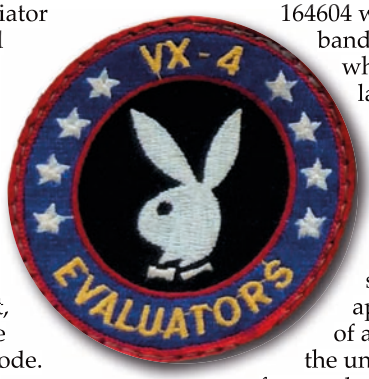
Folklore and legend must now creep back into the story. In the early 1990s the US Navy, and American naval aviation in general, was subject to intense, often emotionally charged, public and political scrutiny. It is beyond the scope of this article to discuss this situation fully, but suffice to say that one of the victims of the outcome of this wide-ranging inquiry was *Vandy 1*, and in particular the Playboy bunny logo. As the furore ran its course, the white bunny logo was removed from *Vandy 1*, as well as all VX-4 aircraft and unit ephemera.

One of five Phantoms known to have carried the VX-4 designation* Vandy 1*, F-4S BuNo 155539 was built as an F-4J and made its first flight on February 22, 1968. It was upgraded to F-4S configuration in May 1981 and was retired to the "Boneyard" at Davis-Monthan AFB in May 1986. Artwork by JUANITA FRANZI / AERO ILLUSTRATIONS © 2016

VANCE VASQUEZ VIA AUTHOR

ABOVE ***The last of the black Tomcats; in September 1994, following nearly two years without a black*** **Vandy 1, *VX-4 received F-14D Super Tomcat BuNo 164604 in an all-black scheme but without the bunny logo, by that time deemed politically inappropriate. The unit was disbanded and folded into evaluation unit VX-9 a few days later.***

There are at least two, rather similar, versions of the story. The most commonly held belief is that an admiral's wife saw the black Tomcat at an airshow, took offence at what the bunny logo represented and insisted that it be removed. One VX-4 alumnus, however, is adamant that it was actually the wife of a VX-4 aviator who took offence at the image and called for its removal. Regardless of the veracity of these theories, sensitivities within the higher ranks of the Navy were on edge, and by mid-1992 the Commanding Officer of VX-4 had directed that the white Playboy bunny logo be removed. A gloss-black *Vandy 1* would later be reinstated, an F-14D Super Tomcat, but the fins would now feature the unit's standard XF squadron tail code.



EVALUATORS BECOME VAMPIRES

In June 1993 the Chief of Naval Operations, as part of an efficiency drive, ordered that VX-4 be disbanded, and its personnel and assets combined with another squadron, VX-5, to create a new unit. Thus, on September 30, 1994, VX-4 was disbanded; VX-5, formed on June 18, 1951, had been disbanded on April 29 the same year. The new squadron, which had been stood up on April 30, 1994, with the personnel and assets of VX-5, was designated VX-9 and nicknamed "The Vampires". Based at Naval Air Weapon Station (NAWS) China Lake in California, VX-9 is still operational today, with a detachment (VX-9 DET) undertaking similar work to that of the former VX-4 at Point Mugu.

During this squadron shuffle, and after a two-year hiatus, a new Tomcat was painted all-black and adorned with the number 1. It arrived at VX-4, without bunny logo, on September 17, 1994, just days before the unit was folded into VX-9. Grumman F-14D Super Tomcat BuNo 164604 wore the traditional flashes and bands of VX-4, XF codes on its fins, on which the Vampires bat logo also later appeared. This *Vandy 1* was operated by the VX-9 detachment at Point Mugu.

On June 22, 2004, VX-9 DET at Point Mugu was shut down. Interestingly, VX-9 did revive the white bunny logo for a very short period in 2005, when it appeared on the inside of the fins of an F/A-18E Hornet. The CO of the unit was relieved of his command, for unrelated reasons, and the bunny quickly faded away, this time for good. At about the same time there were rumours around the squadron that one of VX-9's Hornets would receive the full glossy black treatment; but, with the shake-up of the commander's office, the idea was soon dropped.

The last black *Vandy 1*, Super Tomcat BuNo 164604 (the final production Tomcat), was retired with the closure of VX-9 DET at Point Mugu. It was flown to NAS Oceana in Virginia and placed on static display. It was hoped it would wear the traditional glossy black paint, but it was painted in a standard fleet grey, scheme adorned with the markings of fleet readiness squadron VF-101; an opportunity missed to remind visitors of the iconic power of *Vandy 1*.

From Tokyo to Rome, 1931

第十義勇 Young Japan

Japanese aviation historian **KŌJI YANAGISAWA** *uses the personal diary entries of one of a pair of intrepid Japanese aviators who made a remarkable long-distance flight from Tokyo to Rome in a two-seat biplane in 1931 to chart the course of what would become a forgotten symbol of Japanese aviation's pioneering years. Translation by* **PAUL THOMPSON**

IN NOVEMBER 1930 Hōsei University in Tokyo announced that it had decided to sponsor a flight to Europe on behalf of the newly formed Japan Students' Aviation League (JSAL). The endeavour was backed by newspaper company *Asahi Shimbun* and supported by a society specifically formed for the purpose within Hōsei University. Hyakken Uchida *[for this feature we have used the western custom of putting family name last — Ed]*, a professor of German at the university, who also happened to lead its Aviation Research Group, suggested the planning for this venture. Initially, the goal was to fly to Berlin, but it was reportedly changed to Rome because, according to the popular proverb, "all roads lead to Rome".

EASTBOUND PIONEERS

Why did Uchida hit upon the idea of a flight to Europe? Probably because of a series of long-distance flights undertaken by Japanese pilots in the reverse direction, from Europe. The first was that of 25-year-old Seiji Yoshihara, who had landed at Tachikawa airfield in Tokyo on August 30, 1930. Flying a Junkers-A 50 Junior monoplane, he had covered the 7,086 miles (11,404km) from Berlin in 79hr 58min flying time.

The following day Zensaku Azuma (aged 37) landed his Travel Air 4000 biplane (named *Tokyo*) at Tachikawa to complete a round-the-world flight. After departing Los Angeles, California, on June 22, 1930, *Tokyo* had flown east across the USA, Azuma becoming the first Japanese pilot to traverse the American mainland. Having crossed the Atlantic Ocean, he followed a route from London via stops in Berlin and Moscow before crossing Siberia and touching down at Tachikawa. Azuma had planned to land at Tachikawa first, but he apparently offered the chance to Yoshihara to complete his flight first.

As a Japanese, Hyakken Uchida became excited at the prospect of further long-range flights. Providing him with added encouragement was The Hon Mrs Victor Bruce (*née* Mildred Petre), an Englishwoman who had flown solo in Blackburn Bluebird IV biplane G-ABDS, an aircraft in the same class as Azuma's *Tokyo*, eastabout around the world with ocean crossings completed by steamer. Departing from London on September 25, 1930, she flew via South-east Asia and arrived at Tachikawa on November 24.

Seeing that a woman pilot flying a biplane could take up the challenge, Uchida thought that if a student had the piloting skills and painstaking preparations were made, it would be possible for one of them to fly to Europe during the summer break. Although not a record-setting flight, it would be a fine opportunity for a goodwill exchange between Japanese and foreign students. A plan was set to select a student as first pilot accompanied by a veteran pilot instructor, the flight to Europe serving as part of the tuition.

TAH ARCHIVE

ABOVE ***Described by the international press as "The Lindbergh of Japan", Seiji Yoshihara stands beside the Junkers Junior in which he flew from Berlin to Tokyo via Koenigsberg, Smolensk, Sverdlovsk, Omsk, Krasnoyarsk, Chita, Harbin and Osaka in 1930. He made a failed attempt at a transpacific flight in 1931.***

AND THE WINNER IS . . .

Japanese pilots had already succeeded in flying a pair of French-built Breguet 19s, named *Hatsukaze* (First Wind) and *Kochikaze* (East Wind), owned by *Asahi Shimbun*, to Paris via Siberia in 1925. Uchida was determined that, come what may, the JSAL flight would be undertaken in an indigenous Japanese aircraft. At the time the flight was announced, Hōsei University's Aviation Research Group was made up of six members, of whom only two were qualified to fly solo. Training commenced to select a pilot for the flight to Europe from among these six members.

On March 18, 1931, the selection of first-year economics student Moritaka Kurimura (23) was

OPPOSITE PAGE ***Ryotaro Kumakawa (left) and Moritaka Kurimura stand beside Ishikawajima R-3 J-BEPB, named Seinen Nippon (Young Japan) at the aircraft manufacturer's factory at Tachikawa airfield in Tokyo in April 1931, shortly before undertaking their epic 92-day flight to Rome.*** ALL PHOTOGRAPHS VIA AUTHOR UNLESS OTHERWISE STATED

ABOVE ***One of the six R-3s built, J-BEPB was delivered to Hōsei University in March 1931. Stressed for aerobatics, the R-3 was very much the Japanese equivalent of the British D.H.60 Moth, although the military rejected the type as a primary trainer, mainly owing to its troublesome licence-built Cirrus engine.***

announced in the Tokyo *Asahi Shimbun*. The reasons given were Kurimura's high level of flying aptitude and flair for learning languages, especially English. However, at that time his solo flying experience amounted to a mere 10hr, all of which had been gained on Hōsei University's aged Avro 504 trainer.

A Class 2 pilot's licence would be required to fly overseas. Kurimura thus had to receive training, including more than 50hr solo flying, within the time remaining before the planned date of departure at the end of May. In charge of training was Hōsei University Aviation Research Group instructor Ryotaro Kumakawa, who would accompany Kurimura on the flight to Europe. With intensive training, Kurimura just managed to receive his licence in time, on April 30, 1931.

As it was deemed essential to use a Japanese-designed aircraft for the flight to Europe, there was nothing else for it but to find one. Information was received that the Ishikawajima Aircraft Manufacturing Co Ltd of Tokyo had a potential candidate. Airframe performance had been deemed more than adequate at the time of delivery of three of the company's R-3 (R for *renshuki* — training aircraft) trial machines for a competition to find an Imperial Japanese Army Air Force (IJAAF) trainer. However, reliability problems with the 105 h.p. licence-built Cirrus Hermes II engine had caused the aircraft to be rejected and returned to the manufacturer.

Designed by Shiro Yoshihara and Moriyuki Nakagawa under the guidance of Dr Gustav Lachmann (a German who had been invited over from the Albatros company), the first aircraft was completed in September 1929.

Broadly equivalent to the British de Havilland D.H.60 Moth, the R-3's main wing structure was of wood combined with fabric upper surfaces and plywood undersurfaces. Fabric covered the fuselage of welded-steel tube construction and the Duralumin tail unit and rudder.

Hōsei University applied to the Maritime Defence Association for the purchase of one of these aircraft but was loaned an example free of charge after improvements were made to turn it into a long-range aircraft. Two fuel tanks were added beneath both the upper and lower wings, with the fuel-cocks grouped together so that they could be centrally controlled, and an oil tank was placed either side of the engine. Items could be stored behind the seats, under which toolboxes were placed. High-quality springs were used to make the seats sturdy and comfortable enough for long-distance flights.

Following completion of the work the Maritime

"The day of departure was finally upon us . . . Items that we could take along were limited to basic food and medicines, a change of clothing, handkerchiefs, towels, soap, toothbrushes and toothpaste, shaving gear and spectacles . . ."

LEFT ***Kurimura (left), who had only just gained his full flying licence, and Kumakawa are presented with bouquets of flowers just before the intrepid pair's departure from Haneda airfield in Tokyo on the morning of May 29, 1931. Ahead of them lay a journey of almost 8,500 miles (13,700km) over some of the most remote and inhospitable areas on the planet.***

Defence Association handed over the aircraft — registered J-BEPB and named *Seinen Nippon* (Young Japan) — to Hōsei University on March 19, 1931. The fuselage was silver, with the decking between the cockpit and tail painted grey-blue.

A variety of charts, ranging from a 1:1,600,000 example covering the Russian Chita—Sverdlovsk leg and a 1:200,000 map for Calais to London, were collected in preparation for the flight. Those covering the German leg from Lunenburg down were air navigation charts from Luft Hansa. The charts covering eastern Siberia were out of date and included no terrain-height information. As Seiji Yoshihara had flown the previous year from Berlin to Tokyo by heading east from Koenigsberg in East Prussia (today Kaliningrad in Russia), a route along which there were no regular Luft Hansa services and for which permission had not been given, there was a distinct possibility on this occasion of compiling a course for which permission would be easily granted.

THE ADVENTURE BEGINS

From this point we follow a composite diary-form account of the flight that draws heavily on instructor Kumakawa's memoirs and includes information gleaned from other sources.

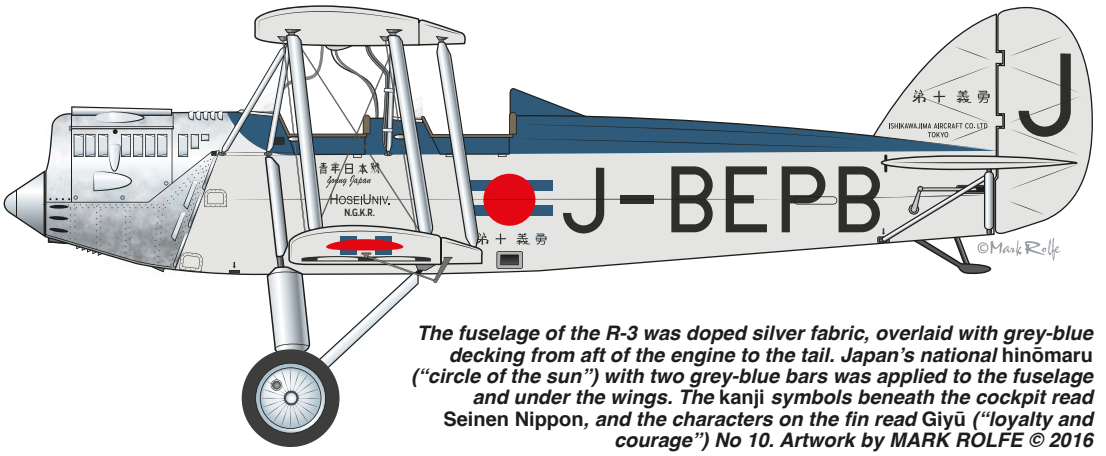
May 29, 1931 The day of departure was finally upon us. Incredibly there were blue skies after last night's torrential rain. We positioned by air from Tachikawa to the new Haneda airfield *[today Tokyo-Haneda International Airport]* and pulled *Seinen Nippon* out from the Japan Air Transport hangar for maintenance.

Messages for town mayors and JSAL counterparts in the countries to be visited were crammed into the spaces beneath our seats. In the end, items that we could take along were limited to basic food and medicines, a change of clothing, handkerchiefs, towels, soap, toothbrushes and toothpaste, shaving gear and spectacles.

Festive departure formalities completed, the two pilots fired up the engine and taxied out. Amid a chorus of voices singing Ririku no Uta *("The Take-off Song") and Hōsei University's anthem, Kumakawa just managed to persuade the heavily laden aircraft to lift off from grass still sodden from the previous night's downpour, some grass being taken along in the wheels as a souvenir. At 1037hr* Seinen Nippon *thus became the first aircraft to take off from Haneda airfield.*

As we set course west in bumpy air conditions, a sea of white clouds obscured Mount Fuji. At 1437hr, we landed at Osaka, where another lavish send-off party was held and we night-stopped.

May 30 Took off from fog-shrouded Osaka at 0700hr. Crossing the Inland Sea *[which separates Honshu from Shikoku]* we headed across the Sea of Japan bound for the Korean peninsula.



The fuselage of the R-3 was doped silver fabric, overlaid with grey-blue decking from aft of the engine to the tail. Japan's national* hinōmaru *("circle of the sun") with two grey-blue bars was applied to the fuselage and under the wings. The* kanji *symbols beneath the cockpit read* Seinen Nippon, *and the characters on the fin read* Giyū *("loyalty and courage") No 10. Artwork by MARK ROLFE © 2016

Landed at Urusan, Korea, some 5hr 40min after leaving Osaka. During the flight the r.p.m. counter sensor in the engine burnt out and failed and will need to be repaired at next overnight stop in Keijo *[now Seoul]*. Departed Urusan, arrived at Yeouido airfield in Keijo at 1715hr.

May 31 Now with a fully functioning r.p.m. counter, took off from Keijo at 0543hr. Crossing the Yalu River we were finally over Manchuria and crossing the Asian continent proper. Landed and refuelled at an airfield north-east of Hōten, Manchuria *[today Shenyang in China]*, then followed the railway line north to Harbin. En route we flew through heavy rain that looked like giant marble columns but made it safely through to nightstop in Harbin, although very low on fuel.

June 1 Spent all day making preparations for the trans-Siberian flight and crossing into Russia.

June 2 Departed Harbin 0625hr. After refuelling at Tsitsihar *[Qiqihar]* flew over Tahsingangling *[mountains on the Russo-Manchurian border, which reach an altitude of 3,940ft (1,200m)]*. As *Seinen Nippon* could only reach 4,270ft [1,300m] it was a close-run thing. With Tahsingangling, the first major obstacle, vanquished, the vast plains of Mongolia stretched out before us. Landed at Manchouli, Manchuria *[now Manzouli, China]* to spend the night.

June 3 The day to cross over into Russia had arrived. We had planned to depart early in morning but because of the intense cold the engine took forever to burst into life. Finally took off from Manchouli at 0920hr and followed the Siberian railway line to land and nightstop at Chita. Immigration formalities were concluded by replying "*nyet*" to such questions as "Are you military?" and "Are you carrying any weapons or cameras?"

June 4 When about to depart Chita, advised to be careful as we were bound to get low on fuel. It would take 30min to fly straight across Lake Baikal, but safer roundabout route following railway line around lake would take 2hr.

After take-off we were at once engulfed in fog and visibility deteriorated. Contemplated diverting but took the advice to fly directly across the lake. Managed to fly on instruments over Lake Baikal without incident. Flying along the Angara River, we reached Irkutsk.

June 6 After a complete day devoted to rest and aircraft maintenance, we took off from Irkutsk at 0840hr only for flames to belch immediately from the right [starboard] side of the engine. We shut it down and glided back to the airfield. On inspecting the engine it was discovered that there was a big hole where the third cylinder's spark plug should have been, and it was from this that flames had shot out.

Ishikawajima R-3 data

Powerplant 1 x 105 h.p. Ishikawajima Cirrus Hermes II four-cylinder air-cooled inline piston engine driving a Y-32 two-bladed wooden propeller

Dimensions		
Span	9·80m	(32ft 2in)
Length	7·50m	(24ft 7½in)
Height	2·98m	(9ft 9¼in)
Wing area	24·5m²	(264ft²)
Weights		
Empty	455kg	(1,003lb)
Loaded	680kg	(1,500lb)
Wing loading	27·7kg/m²	(5·6lb/ft²)
Performance		
Maximum speed	170km/h	(106 m.p.h.)
Cruising speed	140km/h	(87 m.p.h.)
Climb to 2,000m (6,600ft)	12min	
Service ceiling	6,000m	(19,700ft)

青年日本號

LEFT Kurimura (keft) and Kumakawa pose for a publicity photograph after the delivery of the R-3 to Hōsei University. The aircraft was one of 11 of various types, all bearing the symbols for* Giyū *and a number, donated for good causes by the Maritime Defence Association.

BELOW With the first leg from Tokyo completed in exactly four hours, a gleaming Seinen Nippon arrives at Osaka-Tatetsu airfield on May 29, 1931. The following day the pair were to fly over the Sea of Japan, considered a brave undertaking in a light aircraft at the time.

Sent a cable from the hotel updating Hōsei University and the Civil Aviation Bureau on progress and discussed how to handle situation.

June 8 Received the following communication from Hōsei University: "IHI engineer Kuwahara bringing cylinder head to Manchouli. Can one of you collect?"

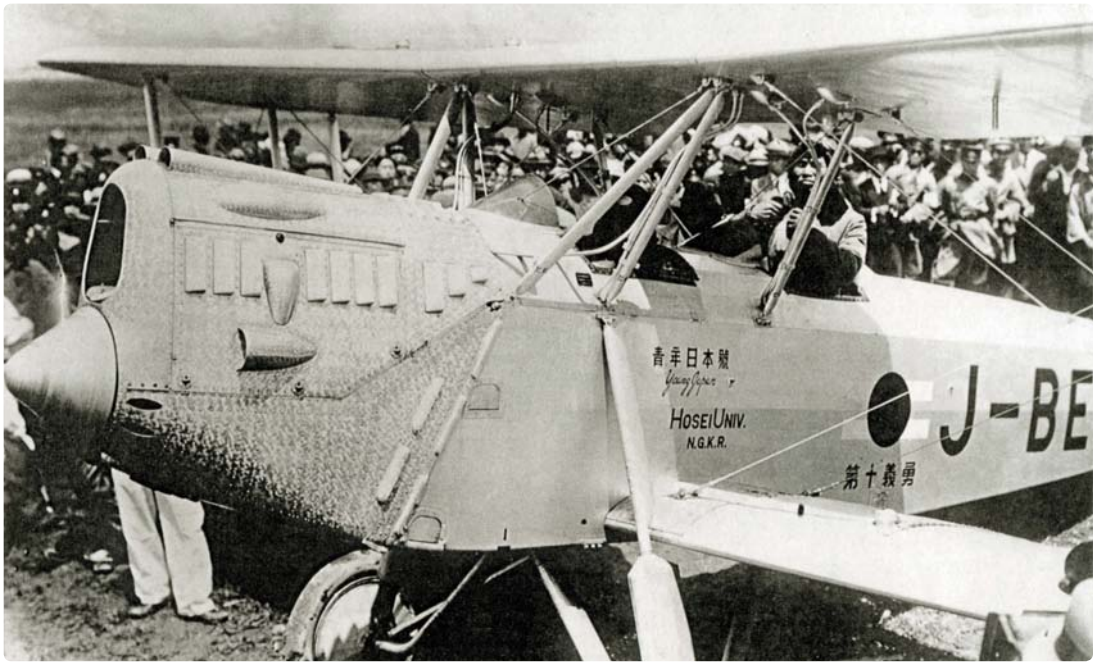
Student pilot Kurimura headed back from Irkutsk to Manchouli by train on June 12. When leaving Russia on June 14, he handed over maps, documents, pilot's licence etc to a Russian soldier. Arrived at Manchouli and accepted delivery of cylinder head from Kuwahara the same day.

June 17 Kurimura returned to Irkutsk. Work on fitting new cylinder head undertaken.

June 19 After flight-testing yesterday, finally took off from Irkutsk. Flew with Trans-Siberian Railway visible to our left, landed at Nizhneudinsk for refuelling. Took off again, continued flying across a vast, seemingly limitless expanse of dense Siberian forest, which would be as unforgiving as the sea in event of a forced landing. After passing over forest fires, landed safely at Krasnoyarsk, where we stopped for the night.

June 20 Once again followed Trans-Siberian Railway after take-off from Krasnoyarsk, landed at Novosibirsk airfield, which served scheduled flights in Siberia. Went to Japanese consulate, where we received information and first proper Japanese meal for some time.

June 22 Departed Novosibirsk. More of the same view stretched out before us. Arrived at Omsk airfield. At that time installation of night-landing equipment at all Siberian airfields had just been completed. We had lunch, refuelled and replenished our supplies. The outside air temperature dropped noticeably as we flew over Petropavlovsk to land at Kurgan.



ABOVE ***The pair arrive at a destination on the Korean or Chinese part of their epic journey. The R-3's Cirrus engine mounting was attached to the fuselage by only four bolts and was built up from Duralumin channels reinforced by a curved Duralumin plate beneath the engine, this plate also serving as the bottom half of the engine cowling.***

June 24 We took off but were forced to turn back to Kurgan owing to dense fog. Weather improved in the early afternoon and we were fortunate enough to be able to cross our biggest hurdle — the Ural Mountains that divide Asia from Europe — without a hitch. Landed at the mountain town of Krasnoufimsk to rest.

June 25 Flew in a direct line from Krasnoufimsk to Sarapul over vast wheatfields before descending into Kazan.

June 26 Lockheed Model 5C Vega *Winnie Mae [in which Americans Wiley Post and Harold Getty were attempting to fly around the world]* flew over Kazan airfield as we made preparations to depart. In 38°C (100°F) heat we took off and followed the bank of the Volga River. Had planned to land at Seima airfield but as we still had fuel decided to carry on as far as Moscow.

We had only been flying on for a while when unusual sounds started to come from the engine; the propeller revolutions became irregular and the airframe began to shake violently. Made an emergency landing in a wheatfield near Gorokhovets. Upon checking the damage to the aircraft we found that a connecting rod was protruding like a bone through a huge hole it had punched in the crankcase. We lashed down the aircraft with a rope.

Leaving Kurimura at the landing site, I asked a Red Army cavalry unit I'd chanced upon to send a telegram informing the Union of Societies of Assistance to Defence and Aviation-Chemical Construction of the USSR (Osoaviahim) and the Japanese Embassy in Moscow of our predicament.

As those receiving the message in Japan could not understand Russian, it was not until the editorial department at the Asahi Shimbun *was called upon to translate it that the urgency of the pilots' situation was finally understood.*

June 27 The aircraft was dismantled by engineers despatched to the site by the Soviet Air Force and arrangements made for it to be transported by train to Moscow.

June 28 Accompanied aircraft; departed for Moscow from Gorokhovets station at 2140hr.

June 29 Arrived at Moscow Station at 0930hr. Courtesy of the Japanese Embassy I sent details of forced landing in telegram to Japan.

July 2 Received telegram from Hōsei University saying: "Continue flight, arrangements for engine made in London."

A new Cirrus engine arrived from London on July 7.

July 12 Work on installing and tuning engine commenced. At first, Kurimura not allowed to be present, only myself.

July 17 Satisfactory test flight made. Permission

ABOVE ***A rare air-to-air photograph of*** **Seinen Nippon** ***in flight. The R-3's wings — with spars of boxed spruce and three-ply — were of all-wood construction with a three-ply leading edge and were fabric-covered. The aileron hinge points were fitted, so Ishikawajima claimed, to compensate for yaw, thus reducing rudder work for the pilot.***

for return flight from Moscow to Gorokhovets applied for but refused by Russian side.

In the end, the 155 miles (250km) of this leg was left out of the calculation of the final flight distance.

INTO EUROPE

July 21 Having signed the border-crossing declaration form, we departed Moscow and continued the flight in intermittent rain to land at Daugavpils airfield in Latvia.

July 22 Heavy rain fell all morning, so departure postponed. Attended to places in the aircraft where fuel had spurted out yesterday.

July 23 Took off from Daugavpils, headed for Lithuania. Flew over a region where a vast lake extended between the hills, and roads led off towards Germany. Landed and completed entry formalities at Koenigsberg *[Kaliningrad]* airfield, which lies on the northern Europe scheduled services route. Visited Luft Hansa, the company that will be maintaining the aircraft. In the afternoon, we accomplished one primary goal by paying a courtesy visit to the city mayor to hand over a message from his counterpart in Tokyo.

July 24 After carrying out some aircraft maintenance, we spent the day sightseeing around Koenigsberg.

July 25 Took off from mist-enshrouded Koenigsberg airfield. Flew across Danzig Bay to Bytow and then made a beeline for Berlin, below us a region speckled with innumerable glacial lakes. With a tailwind in our favour, we landed at Berlin's Tempelhof airport an hour ahead of schedule. We'd arrived in Berlin, our original first-planned destination.

Visited the Berlin Students' Flying Group and the German Aviation Research Institute. Invited to a gathering of the German Aviation Club in the afternoon. A telegram from expedition planner

ABOVE ***Kurimura (third from left) and Kumakawa (second from right) are greeted by a small welcoming party at Tempelhof airfield in Berlin on July 25, 1931. Berlin had initially been selected as the destination for the flight to Europe, but in the event it was decided to make Rome the final objective.***

MAP BY MAGGIE NELSON

Uchida awaited us when we returned to the hotel: "Incredibly happy to hear of safe arrival in Berlin. Can finally relax".

July 29 Undertook engine repairs and refuelled for the following day's flight. Attended a student dance and socialised at Berlin Technical University in the evening.

July 30 Departed Berlin. Climbed above cloud to pass over the obscured Hartz Mountains. Flew by compass as we were unable to see the ground. Passed over Essen, crossed the River Rhine and entered Belgium. Even comparing the lookalike towns that were dotted about with the map, we had no idea where we were. Once again with the aid of the compass we flew in a straight line and landed safely at Brussels airport. Visited city hall to hand over a message from the mayor of Tokyo.

August 1 The sky was a uniform grey from morning onwards. Placed a call to London and after some discussion decided to aim for Hanworth airfield just outside London. Took off from Brussels at 1130hr. We headed for Calais, but as there was a strong wind from the north-northwest we veered off track somewhat.

Usually when about to cross the Straits of Dover an aircraft remains airborne, with the pilot signalling his departure and arrival to observation points at Calais and Dover. However, as the sea remained covered in dense fog, we were unable to get a fix on any landmarks in flight. Once again we flew by compass and after 40min caught our first glimpse of the English mainland and changed course to head into wind.

We followed the course of the River Thames and were finally over London. We headed for Croydon airport to clear customs and complete immigration procedures. After visually confirming a white signal flare, which meant that we were cleared to land, we touched down and were greeted by one of *Seinen Nippon's* designers, Shiro Yoshihara, who caressed the aircraft with his hands as if he were soothing a child after a long journey. When the formalities were complete, we flew across to Hanworth.

Captain Sempill, the president of Hanworth Aero Club, who had travelled to Japan in 1921 with the Royal Navy to instruct the fledgling Imperial Japanese Navy's air units, gave us a rapturous welcome. Afterwards, when we confirmed the route we had taken with a map, it was thought that we had crossed the English Channel from Boulogne to Hastings, which would have added about 18½ miles (30km).

A tea party was held at Hanworth Aero Club in our honour and also for the Australian pilot James Mollison, who held the world record for a flight from England to Australia. Also present were *[The Hon Mrs Victor]* Bruce and Capts Scott and Smith, all of whom had been on flights to Japan. As cylinder parts had melted, *Seinen Nippon* was taken to the Cirrus factory in Croydon , where the engine was stripped down and repaired.

August 10 Took off from a rainswept Croydon airport at 1130hr, landing shortly after at Lympne to clear customs. As a strong wind was blowing, this time from the south-south-west, we drifted three miles (5km) to the south of Calais.

From Boulogne we flew in heavy rain with the top halves of our bodies soaked through. Even though we were wearing goggles, we couldn't see a thing in the heavy rain. We were contemplating an emergency landing when it brightened up to the south of us, so we turned and continued the flight south, following the Somme river. Eventually the Eiffel Tower came into view.

Then we were over Paris. *Seinen Nippon's* wheels touched *terra firma* once again at Le Bourget airfield, evoking memories of Charles Lindbergh's solo transatlantic flight *[in 1927]*. We were carried aloft from shoulder to shoulder by

BELOW: 1931 POSTCARD COMMISSIONED BY HŌSEI UNIVERSITY

the assembled throng of people who instantly surrounded the aircraft to greet us.

Dr Tanaka, president of the Japan Students' Aviation League, was also present at a welcome party that started with a champagne toast. "I am genuinely delighted for the success of these two young Japanese. Parisians, please raise your glasses!" he said during his speech in fluent French. A number of other welcome parties were hosted during our time in Paris, for instance by the French Aeronautical Society, French Aviation Minister Jacques-Louis Dumesnil and the Japanese Embassy.

MORE REPAIRS

August 22 During preparations for departure from Paris that were beset with difficulties, it was discovered that a rivet inside the propeller spinner had almost completely sheared off and that the propeller mounting was incorrect. By chance the repairs were undertaken by Roger Robert, an engineer from the Bernard Aircraft Co who happened to be in Paris for the flight tests of *Trait d'Union No 2*, the second prototype Dewoitine D.33, before its attempt to fly non-stop from Paris to Tokyo.

As the repairs had needed two days, it was not until the evening of the 22nd that they were completed. While the repairs were being undertaken, we drank tea with one of the *Trait d'Union No 2* pilots, Joseph Le Brix, and wished each other every success for our respective flights.

Le Brix was one of two crew members tragically killed when Dewoitine D.33 Trait d'Union No 2 *suffered technical difficulties and crashed in the Urals on September 12, 1931.*

August 23 Departed Paris, following the Seine to its tributaries. While taking care to avoid the mountain ranges on either side of us, we continued flying only to encounter heavy rain and have our route barred by thick black clouds. We decided to make an emergency landing, which we managed to make in a field situated on a mountain slope.

Kurimura went by car to the nearby town of Auxerre to send a telegram. As the rain had stopped, we made use of the field's slope to take off. After landing at Bron airfield on the outskirts of Lyon we refuelled and serviced the engine. We spent the night in Lyon, where the Japanese consul and his wife held a reception in our honour.

August 24 Flight postponed owing to rain.

August 25 Departed Lyon 1000hr, but no sooner had we done so than we were forced to turn back to the airfield with engine trouble. The airfield was straight ahead and we were at a height of 160ft (50m) when the propeller stopped, but we managed to glide in for a landing nevertheless. We were lucky as far as *Seinen Nippon's* engine-out flight stability was concerned.

We climbed out to find that we couldn't turn the propeller at all so it evidently looked as if a component had overheated and badly damaged the engine, which was removed for inspection. A telegram was sent to Shiro Yoshihara in London, requesting that he send spare parts as soon as

LEFT ***Japanese Ambassador to Rome Shigeru Yoshida (third from left) greets Kurimura and Kumakawa at Rome-Littorio airfield on the conclusion of the pair's remarkable flight on August 31, 1931. Third from right is Chan Shiniru, deputy head of Hōsei University's Aviation Research Group.***

BELOW ***After its return to Tokyo from Europe by ship in October 1931,*** **Seinen Nippon** ***was immediately reassembled and placed on display in a newly-opened hall at the Tokyo Science Museum, where the Emperor and Empress of Japan inspected the aircraft.***

possible. The reply came back, "Accompanying engineer and parts on tomorrow's scheduled flight to Lyon".

August 26 Yoshihara and the engineer arrived late and quickly dismantled the engine.

August 30 Flight testing completed without a hitch. Timed with the first break in the clouds and rain, we took off at 1222hr. Headed south with the Alps visible before us. We mulled over another emergency landing when the oil pressure began to drop, but continued on to Marseille when this returned to normal.

August 31 The day of our arrival at our final destination was upon us. The weather was superb. Departed Marseille and flew for about 90min to Cannes, where clouds began to build up. By the time we reached Nice we were virtually over $^{10}/_{10}$ths cloud, but once in a while we could catch a glimpse of the blue sea of the Côte d'Azur through gaps in the clouds.

We had passed San Remo when a blanket of oil began to spurt from the engine. We thought that the engine was about to give out at any moment. I was unable to see because of the oil that had covered my goggles, so I used a handkerchief for a couple of minutes to wipe them off. As the engine sounded fine, we somehow managed to continue on our way to make a landing at Pisa.

As both of us were covered in oil we washed it off at a hotel. When we checked over the engine we discovered that the oil had come from the

No 1 cylinder. As there was no way for us to undertake repairs, we filled up with oil and continued the flight, departing Pisa at 1535hr. Not a cloud was in the sky — and the oil continued to leak unabated.

Finally Rome came into view. Escorted by a gaggle of aircraft that had turned out to greet us, we touched down at Rome-Littorio airfield at 1757hr. Both of us were in floods of tears. Since leaving Japan we had covered a distance of 8,490 miles (13,671km), had flown on 21 of 92 days and amassed a total flight time of 126hr 53 min.

September 3 In the afternoon we were granted an audience with Pope Pius XI, who said that he was pleased that we had completed the flight safely. Afterwards we received an invitation to meet with Prime Minister Benito Mussolini, so hurriedly set off for the Palazza Venezia. When he called us forward to shake our hands Mussolini thanked us for selecting Rome as our final destination.

THE RETURN HOME

And with that Kumakawa's diary entries conclude. On September 6, 1931, having successfully completed the flight to Europe, Kurimura and Kumakawa returned by sea to Japan aboard the *Kagoshima Maru* from Naples.

Seinen Nippon was also transported back to Japan by ship after being dismantled the following day. The pilots arrived at the port of Tokyo on the evening of October 11. For their homecoming they returned to Hōsei University in a specially decked-out car amid raised arms, shouts of "*Banzai!*", a sea of garlands of flowers and camera flashes.

Hōsei University Deputy Chancellor Akiyama gave an account of the flight to Europe and announced that this would be the last of them. Belgium had awarded the *Croix de Chevalier de la Couronne* to Kurimura and the *Croix de Chevalier, Ordre de Leopold (II)* to Kumakawa. Decorations were also received from Prussia and Italy. France was to have presented them with *Légions d'honneur*, but in the end these were not awarded. The Japan Aeronautic Association recognised the achievement of Kurimura and Kumakawa with the Medal for Merit, while Rome University granted the pair honorary degrees. Hyakken Uchida relayed a message from the Japanese foreign minister, who had promised to attend but because of a cabinet reshuffle could not be there.

The question that remains is why the student flight to Europe is far less well known in Japan than that of the Mitsubishi Ki-15 *Kamikaze* (which flew from Tokyo to London in 1937) or the round-the-world flight of *Nippon*, a converted Mitsubishi G3M2, in 1939. First, the student flight to Europe arrived in Rome on August 31, just a matter of days after the arrival of Charles Lindbergh and his wife Anne Morrow in their Lockheed 8 Sirius floatplane at Kasumigaura, Ibaraki Prefecture, on August 26. The media frenzy the Lindberghs' arrival in Japan had generated overshadowed the completion of the student flight to Europe.

Soon after came the flight of Emsco B-2 *Clasina Madge*, in which Cecil Allen and Don Moyle attempted a crossing of the North Pacific from Sabishiro on September 8, 1931. After being forced to land on Siberia's Kamchatka Peninsula the following day, Allen and Moyle did not reach the USA until September 25.

Then came the news of what was to become known in Japan as the Manchurian Incident of September 18, 1931, the precursor to Japan's annexation of Manchuria, which turned the Japanese public's attention to events on the Chinese mainland.

A final factor was Bellanca Skyrocket J-300 *Miss Veedol*, flown by Clyde Pangborn and Hugh Herndon, which had departed Japan on October 4, 1931, and succeeded in making the first non-stop crossing of the Pacific on October 6, five days before the ship carrying *Seinen Nippon* and its crew docked at Tokyo. It was unfortunate timing that caused Kumakawa and Kurimura to become Japan's forgotten pioneers.

After the big flight

A TOTAL OF six Ishikawajima R-3s were built: J-BAAF, J-BDEA, 'DEB and 'DED, J-BEPB and J-BDUB. After the flight to Europe, *Seinen Nippon* (J-BEPB) remained on loan to the Japan Students Aviation League, part of the Volunteer Foundation of the Maritime Defence Association.

In July 1932 Meiji University students flew the aircraft between Tokyo and Hsinking in what was then the Japanese puppet state of Manchukuo (now Changchun in China), accompanied by a Fiat A.S.1 flown by Waseda University students. The purpose of these flights was to mark both Japan's founding of Manchukuo the previous February and to show support for Japanese nationals residing in Manchuria. The flights departed from Yoyogi parade ground in Tokyo on July 7, 1932, and arrived in Hsinking on July 16, from where they departed on July 23, arriving back at Haneda airfield on August 2.

Seinen Nippon also participated in the All-Japan Student Aviation Championships held from 1934. There are photographs of the aircraft at the championships in June 1937, but after that the aircraft's trail disappears without trace. **KY**

ACKNOWLEDGMENTS *The author would like to thank Edo Keiko at Hōsei University, and the Editor would like to thank Paul Thompson and Mark Rolfe, for their invaluable assistance with the preparation of this feature*

Originally built by Victory Aircraft at Malton, Ontario, Avro Lancaster Mk 10AR CF-TQC is seen here at Northwestern Air's St Albert airfield in August 1973. The retardant tanks fitted by the company are visible in the bomb-bay. DAVE WELSH

AN EYE FOR DETAIL

A PROPER FIREBOMBER!

JUANITA FRANZI continues her series, in which she takes a detailed look at some unusual airframes and their markings, with a little-known period in the long life of a famous aircraft

IT WAS 1969 and Avro Lancaster Mk 10AR KB976 had been sitting on the airfield at Calgary in Alberta, Canada, for several years, when the principals of Northwestern Air Lease Ltd (NWAL) struck upon the idea of converting it for aerial firebombing. The former bomber's load capacity was tantalising and it had all the necessary attributes: four-engine reliability; manœuvrability; a rugged airframe and readily available parts and engines.

The company had been established in 1965 at Fort Smith, a small town on the Northwest Territories / Alberta border. Aerial fire suppression was in its infancy in Canada and NWAL was the only such outfit in the area. It was a small operation with the owners, Terry Harrold and Peter Kuryluk, doing the flying. When not contracted to fight a fire they would still, on occasion, fly to the fire location in the hope of work. By 1969 they were operating two North American B-25 Mitchells and a Consolidated PBY-5 Catalina. Adding the Lancaster to the fleet was a significant step for the company, the aircraft having the greatest load capacity of any land-based water-bomber at the time.

Malton-built Lancaster KB976 was one of the last examples of the type operated by the Royal Canadian Air Force (RCAF). On retirement in 1964 it was purchased and briefly flown by a consortium planning to establish an air museum at Calgary. Progress on the museum stalled and eventually the collection began to disperse.

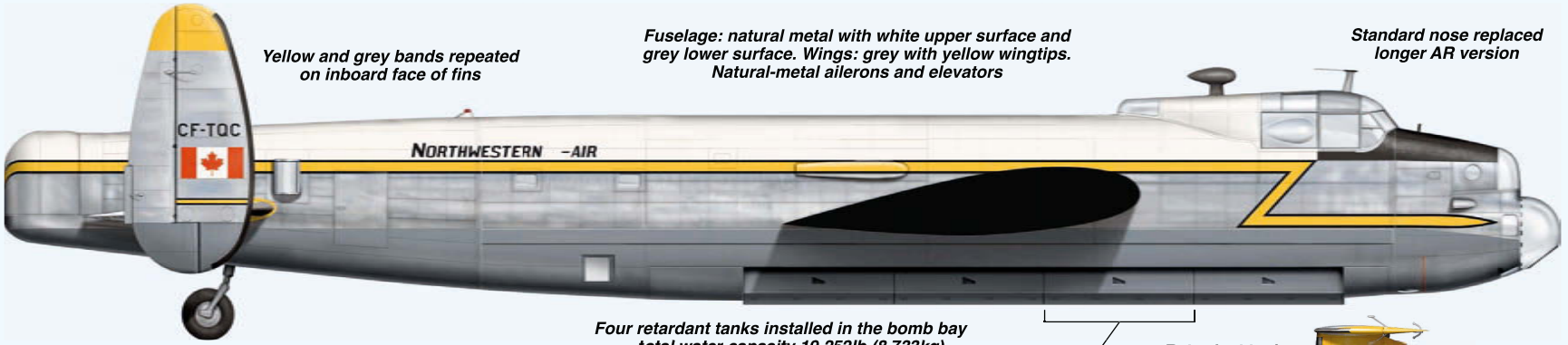
Northwestern Air gained ownership of the Lancaster in mid-November 1969 and put it on the Canadian civil register as CF-TQC. In January 1970 it was flown to a grass strip near Breton, Alberta, for its conversion to a "slurry" (retardant) tanker by Galaxy Aviation Ltd. By now the AR (Area Reconnaissance) variant's longer nose had been replaced with a standard nose, improving visibility from the cockpit. Four retardant tanks were fitted in the bomb bay, giving a total capacity of around 1,900gal (8,635lit). Each tank could be controlled independently and was fitted with hydraulically-operated doors.

By July 1970 the conversion was complete and a series of test flights was conducted before the onset of winter. Flying recommenced in summer and in July 1971 the Lancaster was ferried to Fort Smith. With Harrold as pilot and Kuryluk in the copilot's seat, the aircraft was put to work against a wild fire in the Wood Buffalo National Park. The Lancaster's performance was only marred by a fault in the design of the tank-door hydraulic system. After a partial retardant-drop, back-pressure during the closing sequence caused the doors on the full tanks to creep open. Before this could be fixed, the company suffered a major blow. On September 1, 1970, Kuryluk was killed when NWAL's Catalina, CF-HTN, collided with a Norcanair Canso during a rescue operation.

The Lancaster was flown back to the Edmonton area in October. Other than a few short ferry flights during 1971 and 1972, it sat dormant. Under pressure from the bank, CF-TQC was put up for sale in early 1974. Its new owner, the Strathallan Aircraft Collection, removed the air-tanker fitting and flew the Lancaster to the UK where it was to fulfil a very different role; that of a world-famous warbird.

AVRO LANCASTER Mk 10AR CF-TQC, NORTHWESTERN AIR, ALBERTA, CANADA, 1969–74

With thanks to Terry Harrold, Robert Stitt, Ian MacDonald and Terry Judge

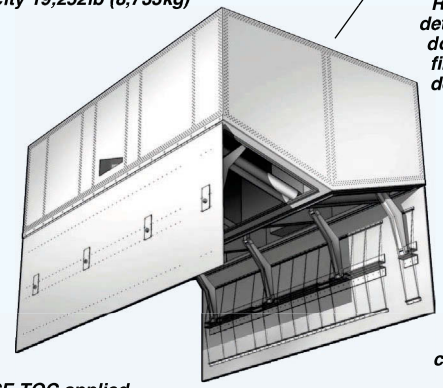


Yellow and grey bands repeated on inboard face of fins

Fuselage: natural metal with white upper surface and grey lower surface. Wings: grey with yellow wingtips. Natural-metal ailerons and elevators

Standard nose replaced longer AR version

Four retardant tanks installed in the bomb bay — total water capacity 19,252lb (8,733kg)



Retardant tank detail shown with doors open and final version of door-operating mechanism

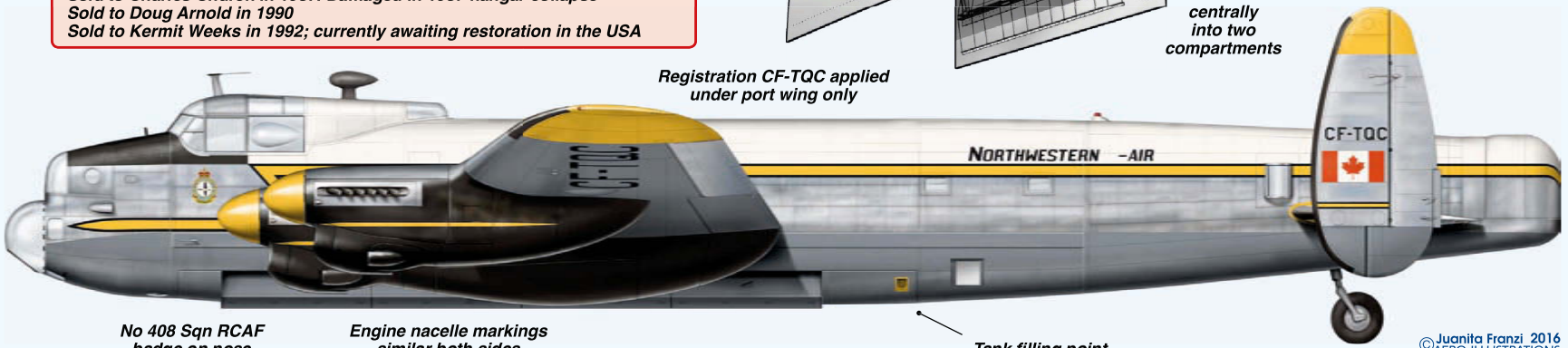
Tailplane top view (underside similar)

Each tank divided centrally into two compartments

AVRO LANCASTER B.X/Mk 10AR KB976/CF-TQC KEY DATES

Built by Victory Aircraft Ltd, Malton, Ontario
Ferried to UK May 1945, allocated to No 405 Sqn RCAF and coded LQ-K
Allocated to Tiger Force and returned to Canada in June 1945
One of three converted to Area Reconnaisance standard in the early 1950s
Operated by No 408 Sqn RCAF
Participated in RCAF Lancaster retirement ceremony on May 1, 1964
Retired from RCAF on May 26, 1964
Sold to Alberta Aviation Museum (later Air Museum of Canada) in 1964
Sold to Northwestern Air Lease Ltd December 1969 and registered CF-TQC
Sold to Strathallan Aircraft Collection May 1974, put on British civil register as G-BCOH and ferried to UK in 1975
Sold to Charles Church in 1987. Damaged in 1987 hangar collapse
Sold to Doug Arnold in 1990
Sold to Kermit Weeks in 1992; currently awaiting restoration in the USA

Registration CF-TQC applied under port wing only



No 408 Sqn RCAF badge on nose

Engine nacelle markings similar both sides

Tank filling point

With the end of the Second World War — and German occupation — came an opportunity for Dutch company Fokker to re-establish its pre-war reputation as a world-class manufacturer of modern aircraft. Dutch aviation historian ***NICO BRAAS*** *tells the full story of the company's uphill struggle to develop the world's first dedicated advanced jet trainer*

machtrainer

WHEN GERMANY capitulated in May 1945 and German troops left the Netherlands, there was not much left of the national aircraft industry. The Fokker factory at Amsterdam-Noord was practically destroyed and any equipment still left was looted by the retreating German forces. The two Fokker hangars at Schiphol were also destroyed.

Much work was done during the *wederopbouw* (reconstruction) of the Netherlands, one aspect being the resurrection of the Fokker works. The company resumed operations in simple, draughty sheds built immediately after the war, undertaking the refurbishment of North American Harvards and de Havilland Tiger Moths for the national aviation school, as well as building a number of German glider types to replace those appropriated by the Germans during the war. This was later supplemented by the licensed manufacture of Hawker Sea Furies for the *Marineluchtvaartdienst* (Dutch Navy) and Gloster Meteors for the *Luchtstrijdkrachten* (LSK — Dutch military air organisation).

Fokker also built eight Koolhoven FK.43s (so-called "Fokhovens") for Dutch air pioneer and industrialist Frits Diepen, and three pre-war S.9 trainers. Fokker's next project, the S.11 Instructor elementary trainer, made its first flight in December 1947 and entered production in 1950. From 1947 the company also commenced with the construction of the twin-engined all-metal S.13 Universal Trainer, of which only a single prototype was built, the plentiful supply of Beech 18s as part of the USA's post-war Mutual Assistance Pact (MAP) obviating the need for a homegrown twin trainer.

The Fokker management was quick to realise

Despite its short, stubby wings, gaping air intake and large, broad canopy, the Machtrainer was nevertheless an attractive aircraft, especially when on the ground, its wide-track undercarriage giving the trainer a purposeful stance. The prototype S.14, K-1, is seen here in November 1951, still fitted with its original Derwent engine.

PHOTOGRAPHS VIA AUTHOR UNLESS OTHERWISE STATED

TAH ARCHIVE x 2

the importance of the newly introduced jet engine and at the 1946 Paris Air Show presented a model of a proposed 17-seat twin-engined jetliner powered by two fuselage-mounted Rolls-Royce Nene engines. Designated as the F.26 Phantom, the full-size aircraft was never built, but the idea had announced Fokker as a modern and progressive aircraft manufacturer. In the wake of the attention given to the F.26, Fokker started with the design of an advanced jet trainer to prepare future pilots for conversion to jet technology and high Mach numbers. What Fokker had in mind was twofold: a transition jet trainer fitted with a Rolls-Royce Derwent; and a trainer with the more powerful Nene for advanced fighter pilot training. In the event, the company achieved only part success with these plans.

TOP ***A trio of Fokker S.11s leads three ranks of factory-fresh Gloster Meteor F.8s, licence-built by Fokker, for the Dutch and Belgian air forces at the Fokker factory at Schiphol in the early 1950s. ABOVE A contemporary advertisement for Fokker's unbuilt twin-Rolls-Royce Nene-powered F.26 Phantom; an ambitious project for a company virtually starting from scratch after the war.***

Post-war planning

Following the official inauguration of the N.V. Fokker company on January 1, 1947, the company set to work on the design and development of an advanced jet trainer. The project was commissioned by the *Nederlands Instituut voor Vliegtuigontwikkeling* (NIV — Dutch Institute of Aircraft Development), which allocated funds for the design and construction of a prototype.

The driving force behind the project was Professor H.J. van der Maas, the chairman of the NIV and one of the leading authorities in contemporary aeronautical engineering. As Fokker had little experience of the specifications required to build such an aircraft, the company based its design around the UK's *Air Publication 970 (1946–52)*, a classified document the British Government was prepared to release to the NIV.

The document gave requirements for size, weight and armament etc for military aircraft, although these were not followed on all points by Fokker. Based on the recommendations of Prof van der Maas, Fokker decided that the new design should concentrate on good flying characteristics rather than high performance. Interestingly, the company deliberately decided to abandon the metric system and adopt imperial measurements for the construction of the new aircraft. As an aside, Fokker also studied a design for a turboprop-powered trainer in the same class as the British Avro Athena, but the idea ultimately came to nothing.

The new jet, intended for the training of future Dutch jet fighter pilots, started as *Ontwerp* (Design) 239, soon followed by Ontwerp 240. Under this designation several configurations were drawn up until a final choice was made (see page 95), after which work on a prototype was started. At the Paris Air Salon in the spring

PHILIP JARRETT COLLECTION

ABOVE ***The Fokker S.14 prototype, K-1, in its initial bare-metal scheme in 1951, while still fitted with its original Rolls-Royce Derwent 8 engine. On the aircraft's second flight the undercarriage jammed halfway down, test pilot Gerben Sonderman having to perform negative-g manœuvres to force it up before making a skilful belly-landing.***

of 1949 the design had advanced far enough for Fokker to display a model of the new jet trainer, which had been given the designation S.14, and which would become the world's first specifically designed jet trainer to enter production — all other jet trainers up until that time had been two-seat versions of existing jet fighters.

As the aircraft's *raison d'être* was to acquaint future jet-fighter pilots with speeds at high transonic Mach numbers, it was appropriately named the "Machtrainer". Work on the prototype was started in the old Fokker plant at Amsterdam-Noord. The forward fuselage, centre section, wing inner sections and tail unit were built as separate units, which were transported by barge to the Fokker flight-service department at Schiphol Airport, where the outer wings were fitted and final assembly took place.

All work had been completed by mid-May 1951, when the aircraft was ready for its first test flight, although it had already performed a number of fast taxy runs. The new jet carried Dutch military markings and was given the registration "K-1". Fokker had applied for civil registration PH-NDY to be applied to the S.14, but this was never used. "K-1" was not an official military registration either, and the prototype never saw service with the Dutch air force.

ABOVE ***Prince Bernhard of The Netherlands climbs aboard the Machtrainer prototype in November 1953, after it had been fitted with a Rolls-Royce Nene engine. About to join the prince is Fokker test pilot Gerben Sonderman, who made the type's first flight in 1951.***

Early flight testing

On May 19, 1951, Fokker test pilot Gerben Sonderman took the Derwent-powered prototype aloft for its maiden flight. It was a short one, as the mainwheels could not be fully retracted. Sonderman lowered the undercarriage and made a safe landing. After repairs, Sonderman tried again, the wheels retracting perfectly. On the landing approach, however, the mainwheels refused to extend fully and Sonderman executed a skilful belly-landing on the grass alongside the concrete runway. Damage was minimal and, after the underside had been repaired, the S.14 was transported to the Paris Air Salon of 1951, at which it was proudly presented on the Fokker stand in the Grand Palais.

Flight testing continued smoothly, with only minor teething troubles, and in January 1952 the Secretary of State from the Ministry of Defence, F.J. Kranenburg, announced the Ministry's intention to place an order for 20 production S.14s, which was confirmed on October 28, 1952.

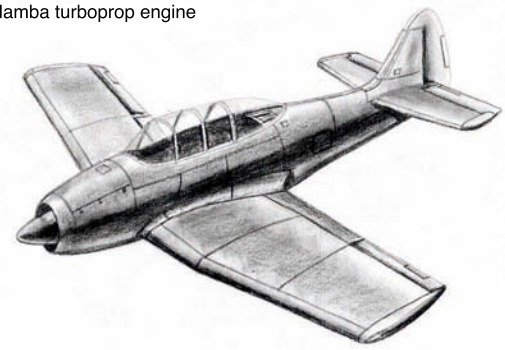
Fokker had envisioned equipping the S.14 with

Variations on a theme: preliminary designs & unbuilt Machtrainer variants *Sketches by Srecko Bradic*

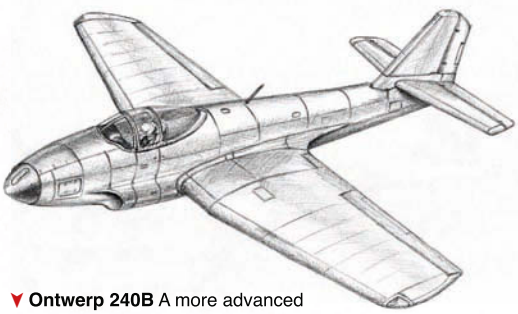
ORIGINALLY CREATED BY Serbian aviation illustrator and artist Srecko Bradic for the definitive book on the Fokker S.14 by Nico Braas and Willem Vredeling (see page 103), the pencil sketches below were not included in the book and are published here for the first time. Also included are sketches of two proposed S.14 developments which were ultimately never built.

Had the S.14 been ordered for the USAF and US Navy (and licence-built by Fairchild), it would have been fitted with American avionics and instruments, an American jet engine and a single-piece canopy. The ventral airbrake would have been removed and the US Navy version would have been fitted with an arrester hook and folding wings. It was, however, not to be.

Ontwerp (Project) 238 A possible alternative of the S-14 fitted with a British Armstrong Siddeley Mamba turboprop engine

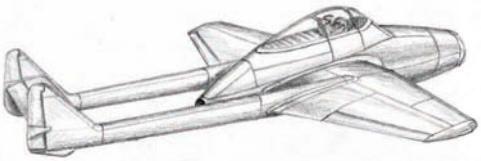


Ontwerp 239 The preliminary design that would evolve into the S.14

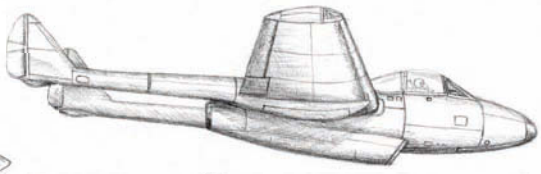


Ontwerp 240B A more advanced development of Ontwerp 240A

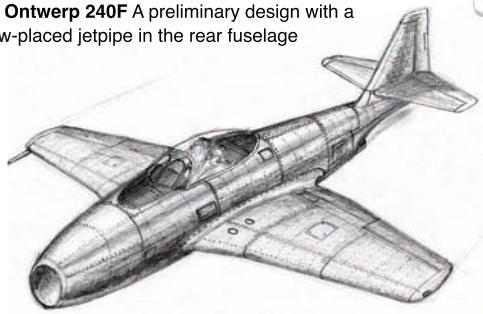
Ontwerp 240A A preliminary design fitted with twin tailbooms. The influence of Fokker's sole pre-war D.XXIII prototype is clear



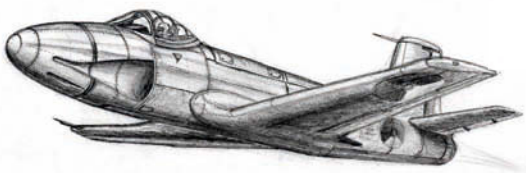
Ontwerp 240D The final preliminary design with a twin-boom configuration, fitted with a ventral air intake



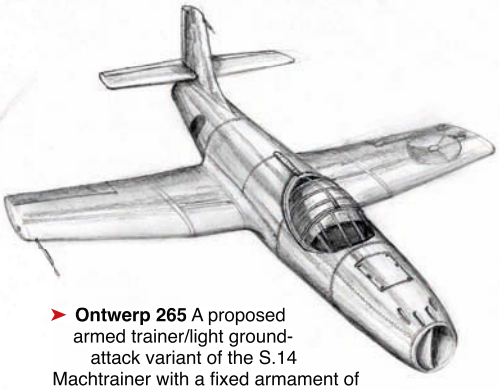
Ontwerp 240F A preliminary design with a low-placed jetpipe in the rear fuselage



S.14 Nightfighter A proposed S.14 nightfighter variant with NACA side air intakes incorporated flush to the fuselage



Ontwerp 265 A proposed armed trainer/light ground-attack variant of the S.14 Machtrainer with a fixed armament of four forward-firing 20mm cannon above the air intake in the nose



MIKE HOOKS COLLECTION

ABOVE ***Conceived as a jet trainer from the outset — the first such aircraft not to be merely a development of a pre-existing fighter design — the S.14 was designed to be able to be spun, incorporating a fin placed well ahead of the tailplane. The prototype, still powered by a Derwent, is seen here during one of its many pre-Nene trial flights.***

the more powerful and durable Rolls-Royce Nene engine, but, in order to achieve commonality with the Derwent-powered Meteors of the *Koninklijke Luctmacht* (Royal Netherlands Air Force — KLu — established as an independent air arm in March 1953), the S.14 retained the prototype's less powerful Derwent. The overwhelming consensus was that the S.14 would perform better with the Nene, but this was deemed non-essential as the KLu did not operate any Nene-engined aircraft at the time. The KLu clearly saw the S.14 more as a transition jet trainer than for advanced fighter pilot training. In the event it was never used for the training of fighter pilots anyway. Improvements for production aircraft included a modified canopy with revised framing to improve visibility from the cockpit.

Production S.14s were fitted with an uprated Derwent 8 engine and began rolling off the production line at Fokker's new factory at Schiphol. The first example for the KLu, carrying serial L-1, made its first flight on January 15, 1955. The other machines, L-2 through to L-20, were delivered over the next year, the last being delivered on November 14, 1956.

At home and abroad

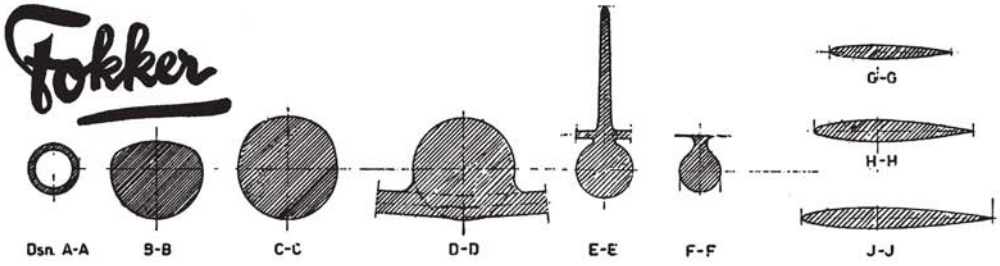
The Machtrainers initially went to Twenthe air base in the eastern Netherlands to join the KLu fighter training school. Since the type was docile and easy to fly, it was used as a proficiency trainer for staff officers to gain flying hours on jets, as well as for night-flying training. Dutch Naval Air Service Hawker Sea Hawk pilots also used the Machtrainers for instrument flight training.

After initial operations from Twenthe, the S.14s started to be deployed to other locations such as Soesterberg, Ypenburg and Woensdrecht, after which the type settled into a steady if rather unremarkable career. The Machtrainer suffered

The second production Machtrainer, L-2, in the static park at RAF Wethersfield's Armed Forces Day on May 9, 1959. All 20 production Machtrainers were painted overall silver/grey with a blue nose panel and tapering cheat line and yellow detailing around the intake plus training bands on the fuselage and wings.

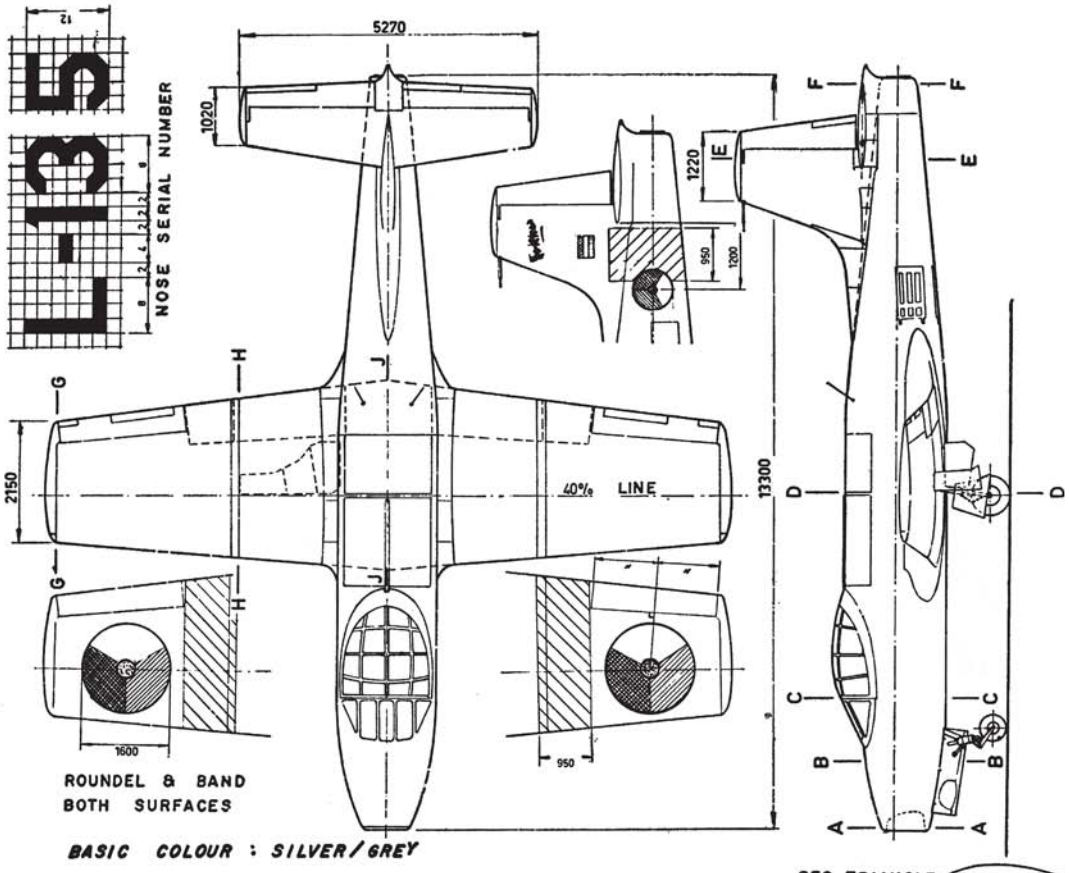
MIKE STROUD / TAH ARCHIVE

Fokker



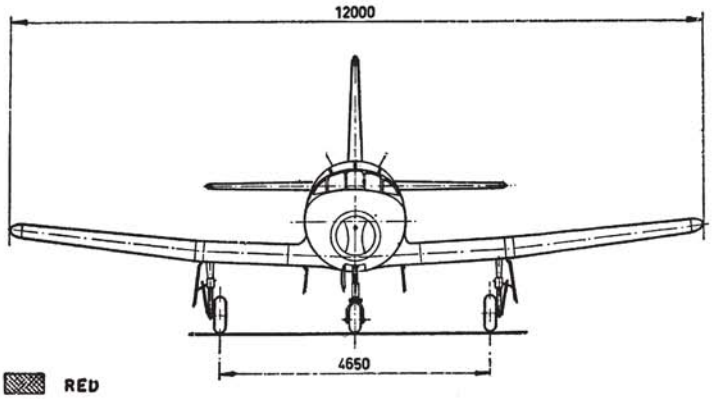
L-13

NOSE SERIAL NUMBER

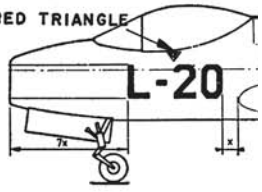


ROUNDEL & BAND
BOTH SURFACES

BASIC COLOUR : SILVER/GREY



RED TRIANGLE



"MACH TRAINER"

RED
BLUE
YELLOW
ORANGE

ALL DIMNS IN MILLIMETERS

FOKKER S-14.1

GET.: A.L.AARTS 23-2-'55
ACC. T.C.-K.N.V.v.L.:

Only one production batch of 20 Machtrainers was built, all powered by the Derwent engine, the logic being that KLu pilots would be converting to Derwent-powered Meteors, making a Nene-powered S.14 variant superfluous to requirements.

PHILIP JARRETT COLLECTION

only one fatal accident during its military service, when two senior staff officers, Cdre J.C.J. Vermeulen and Lt-Col J. Vonk, crashed in L-7 on May 28, 1964, at Heenvliet, near the island of Voorne-Putten. Vermeulen was at the controls of L-7 for a low-level sortie over the Delta Works sea-protection project in the province of Zeeland, when, probably owing to pilot error, the S.14 dived steeply into a dyke, killing both occupants.

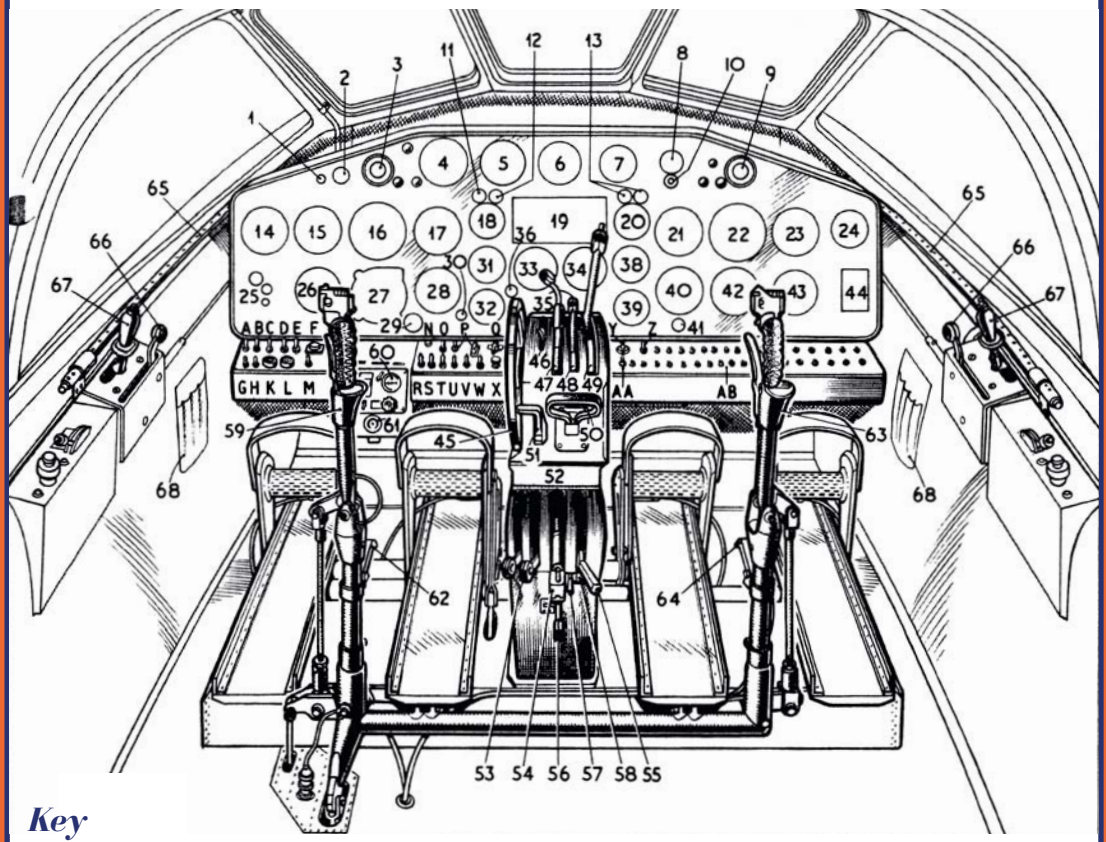
A non-fatal incident occurred in another Machtrainer when a compressed-air bottle, part of the pneumatic system, exploded in flight. Although the engine-access panel behind the cockpit was blown away, the crew managed to make a normal landing. The service career of the Machtrainer drew to a close on September 5, 1967, when the last examples were withdrawn from use after little more than ten years in service.

Back in late 1952, with the KLu order finalised, Fokker mounted a campaign to find international customers for the Machtrainer, and made the prototype available for promotional work. After its exhibition at Paris in 1951, K-1 had continued to fly in its original metallic colour scheme, but this was soon replaced by an attractive blue, polished-metal and yellow paint scheme. In addition, the original Derwent engine was replaced with the more powerful Nene and the cockpit was fitted for pressurisation and the use of g-suits. The Nene's larger-diameter jetpipe required changes to be made to the rear fuselage section, resulting in a new distinctive curved line on the underside of the rear fuselage. The prototype was also fitted with a long nose-mounted probe for accurate pressure and airspeed measurements in the undisturbed airflow in front of the aircraft. A pitch-vane was mounted on the probe.

The conversion to Nene power took four months and, on October 25, 1953, the prototype made its first post-modification flight, before resuming its role as a demonstration aircraft. On June 19, 1954, the aircraft suffered damage in the first of two landing accidents, the other occurring on April 16, 1955.

Ill-fated Machtrainer L-7 is refuelled at Twenthe. The horse emblem on the fin* — Het Twentse Ros — *was a standard marking for aircraft based at Twenthe. Sadly, L-7 went on to become the only Machtrainer to be involved in a fatal accident, when its two occupants were killed during a low-level training sortie over Zeeland in May 1964.

The Machtrainer "office" *Derwent-powered production variant*

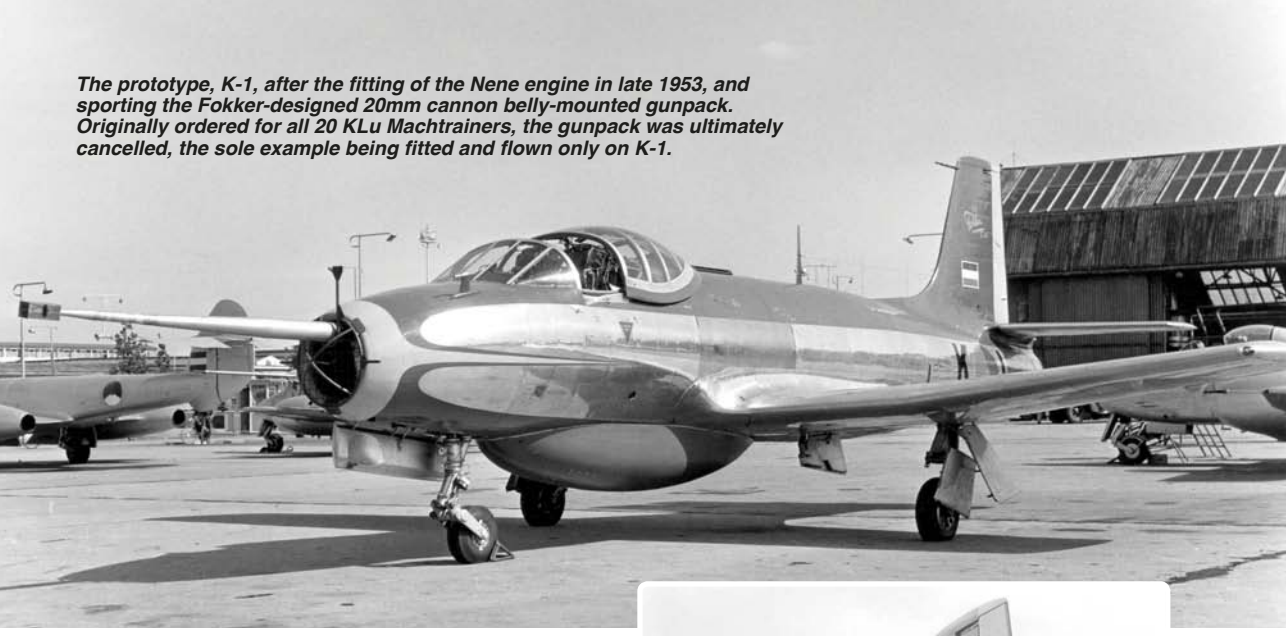


Key

1 & 2 Switch and warning light for fuel pressure
3 & 9 Brackets for instrument panel and gunsights
4 Engine-speed indicator
5 Jetpipe temperature indicator
6 Radio compass
7 Undercarriage (u/c) position indicator
8 Rudder trim-tab indicator
10 Rudder trim-tab switch
11 Canopy lock warning light
12 Flaps warning light
13 U/c and airbrake warning lights
14 Machmeter
15 Airspeed indicator
16 Gyro horizon (electric)
17 Climb indicator
18 Oil pressure indicator
19 Tuner radio compass
20 Clock
21 Airspeed indicator
22 Gyro horizon (vacuum)
23 Climb and dive indicator
24 U/c emergency pressure indicator
25 Radio controls
26 Sensitive altimeter
27 Gyrosyn compass
28 Turn-and-bank indicator (electric)
29 Fire extinguisher installation
30 Engine fire warning light
31 Pneumatic system pressure
32 Accelerometer
33 Fuel contents gauge, port
34 As **33**, starboard
35 Brake pressure indicator
36 Fuel contents switch
37 Deleted (early radio panel replaced by oxygen regulator)
38 Suction gauge
39 Free air temperature
40 Sensitive altimeter
41 Static-pressure selector valve
42 Directional gyro
43 Turn-and-bank indicator (vacuum)
44 Engine data
45 Elevator trim-tab control
46 Elevator trim-tab position indicator
47 Flap control
48 U/c emergency control
49 U/c control
50 Canopy jettison control
51 U/c lock override control
52 Control pedestal
53 LP fuel shut-off cocks
54 HP fuel cock with relight switch
55 Canopy locking control
56 Control surfaces locking lever
57 Canopy operating switch
58 Catch for hood locking control
59 and **63** Instructor's and pupil's control columns carrying brake levers and firing buttons
60 and **61** Oxygen panel and regulators
62 and **64** Rudder pedal adjustments
65 Hot-air spray for windscreen heating
66 Airbrake controls
67 Power levers carrying gunsight controls and transmit buttons
68 Map cases for both pilots

Electrical panels
A Oil pressure; **B** vibrator; **C** starter safety switch; **D & E** booster pumps, port and starboard; **F** starter push-button; **G** turn and slip; **H** navigation lights; **K & L** fuel pressure lights, port and starboard; **M** fuel contents; **N** generator (power-failure light); **O** signal light; **P** isolating valve switch and warning light; **Q** landing-light switch; **R** VHF switch; **S** ADF switch; **T & U** radio compass; **V** gyro-compass and horizon; **W & X** pitot heating and warning light; **Y** cockpit light; **Z** reserve switch; **AA** intercom, muting; **AB** fuses

The prototype, K-1, after the fitting of the Nene engine in late 1953, and sporting the Fokker-designed 20mm cannon belly-mounted gunpack. Originally ordered for all 20 KLu Machtrainers, the gunpack was ultimately cancelled, the sole example being fitted and flown only on K-1.



For weapons training Fokker had designed a detachable gunpack to be fitted under the fuselage, which housed a pair of 20mm Hispano cannon and ammunition, and which added some 375kg (830lb) to the aircraft's weight. The prototype was flown with a mock-up of the gunpack, which had three fixing points and a locking device. After unlocking it could be lowered on four steel cables using a handcrank. The KLu initially ordered 20 gunpacks for its S.14s, but the order was later cancelled. A prototype gunpack was completed and supplied, but was never fitted to an operational S.14. Hardpoints under the wings for eight rocket projectiles or an alternative load of bombs were also proposed, although the prototype was never fitted with a strengthened wing to accommodate the hardpoints.

With the improved performance of the modified Machtrainer, Fokker hoped for orders from international customers — and vigorously promoted the aircraft to officials from many nations including Italy, Chile, France, Spain and various Nato forces. American pilots flying the S.14 claimed it was much easier to fly than the Lockheed T-33 trainer, which, unlike its Dutch counterpart, was prohibited from intentional spinning. International interest in the S.14 was reflected in the price quotations requested from Fokker by Belgium, Chile, Ecuador, Egypt, Indonesia, Israel, Japan, Jordan, Peru, South Africa, Venezuela, Yugoslavia and the USA. The latter went so far as to negotiate the licensed construction of the type in America by Fairchild.

A tragic setback

In 1955 Fokker launched a major charm offensive in North America with plans for an extensive Machtrainer demonstration tour of the USA. Production S.14 L-4 was selected as the display aircraft, rather than the Nene-powered prototype.

ABOVE *The revised rear fuselage of the Nene-powered Machtrainer incorporating the new engine's larger jet-pipe. Note also the extended three-section lattice-type airbrakes which replaced the originals, which were of slab type, to cure buffeting problems The revised slotted airbrakes were fitted to production examples.*

On October 18, 1955, having been made ready for flight at La Guardia Airport in New York, L-4 was ferried by Sonderman to the Fairchild factory at Hagerstown in Maryland, to perform demo flights for USAF officers. Over the next two days Sonderman performed three demo flights with Fairchild test pilots aboard, one of whom was future commuter airline pioneer Dick Henson.

On October 20 Sonderman started another routine flight demonstration, which included one of the Machtrainer's greatest assets — its ability to recover from intentional spinning. To the great

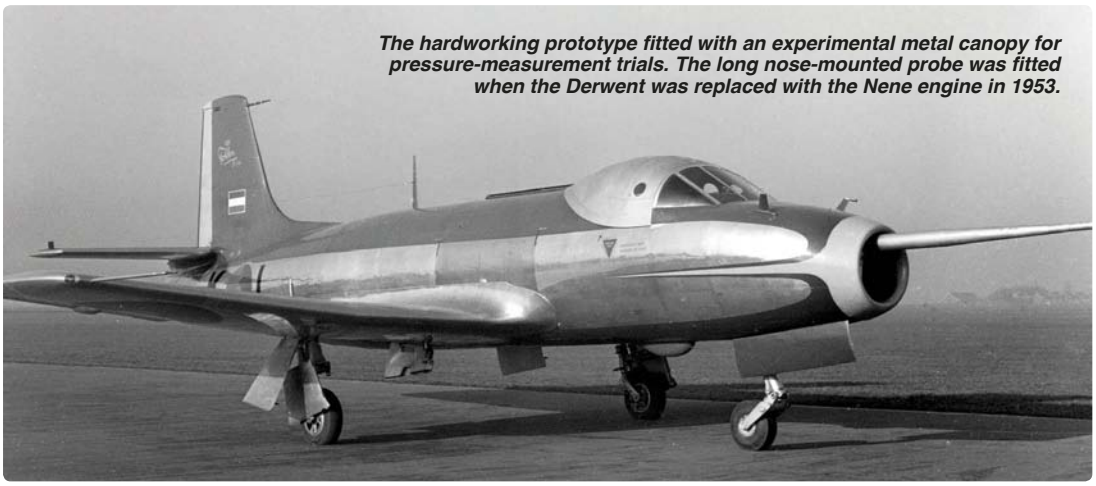
PHILIP JARRETT COLLECTION

ABOVE LEFT ***Dutch air force pilot Joop Willemsen accrued almost 1,000 flying hours in the S.14 as an instructor at Ypenburg, where non-operational pilots gained jet experience and Dutch Navy Hawker Sea Hawk pilots took their instrument ratings.*** **ABOVE RIGHT** ***Fokker's accident investigation committee surveys the wreckage of L-4 in the USA in 1955.***

horror of spectators, however, Sonderman did not recover from the spin and the S.14 erupted into a ball of flame as it piled into the airfield; Sonderman, only 46 years of age, was killed instantly. Another production Machtrainer, L-6, and a Dutch technical-support team were quickly despatched to the USA, where the aircraft was flown by American pilots. Although Sonderman's crash was never specifically blamed, neither the USAF nor the US Navy went on to select the S.14 as their standard jet trainer, and the planned licensed production at Fairchild went no further.

Prospects for the Machtrainer looked little better in Nato countries, especially as T-33s were being made available by the USA under extremely favourable conditions. Fokker's last hope for the Machtrainer was Brazil, which committed to an option for 50 examples. The Dutch company agreed to supply parts for five S.14s to be assembled in Brazil; the rest were to be built locally by Fokker Industria Aeronautica SA (FIASA), a subsidiary founded with Brazilian governmental money and supported by Fokker, the latter's S.11 and S.12 designs already having been built under licence in Brazil. Differences incorporated into the Brazilian Machtrainers would be the replacement of the Dutch examples' Dunlop wheels and tyres with Goodyear items.

Unfortunately these production plans were never realised either. Some sources have stated that the supply of the S.14 parts was completed; Fokker did indeed claim that the parts were shipped to Brazil, but it never actually happened. Owing to financial difficulties at the Brazilian factory, all of the S.14 parts earmarked for shipping



The hardworking prototype fitted with an experimental metal canopy for pressure-measurement trials. The long nose-mounted probe was fitted when the Derwent was replaced with the Nene engine in 1953.

Fokker S.14 Machtrainer data

Powerplant	1 x Rolls-Royce Derwent VIII of 3,475lb (1,575kg) thrust	1 x Rolls-Royce Nene 3 of 5,100lb (2,315kg) thrust
Dimensions		
Length	13·3m (43ft 8in)	13·3m (43ft 8in)
Span	12·0m (39ft 5in)	12·0m (39ft 5in)
Height	4·7m (15ft 4in)	4·7m (15ft 4in)
Wing area	31·8m² (342ft²)	31·8m² (342ft²)
Weights		
Empty	3,765kg (8,305lb)	3,970kg (8,745lb) or 4,043kg (8,913lb) with increased fuel capacity
Loaded	5,350kg (11,800lb)	5,550kg (12,230lb) or 5,890kg (12,985lb) with increased fuel capacity
Power loading	3·13lb/lb-thrust	—
Performance		
Maximum speed	730km/h at 6,000m (455 m.p.h. at 19,700ft)	860km/h at 3,000m (535 m.p.h. at 9,800ft)
Service ceiling	11,200m (36,750ft)	12,900m (43,300ft)
Maximum range	965km (600 miles)	910km (565 miles) or 1,140km (710 miles) with increased fuel capacity

BELOW ***The prototype, registered PH-XIV, on display in the distinctive Aviodome museum at Schiphol in September 1971. Having provided sterling service as a trials aircraft, the S.14 prototype was retired by Fokker in 1956, only to be made airworthy again and used as a test article by the Dutch scientific organisation NLL/NLR during 1960–66.***

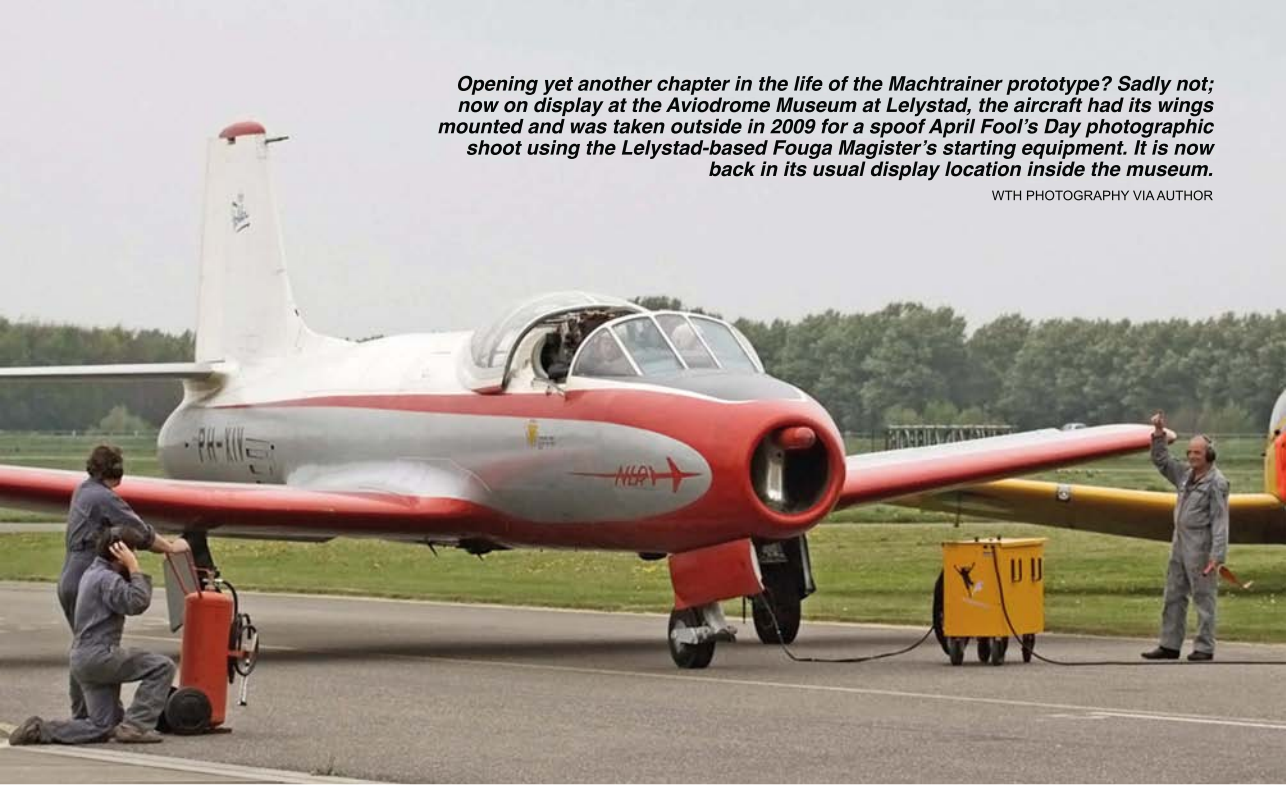
to Brazil remained in storage at Schiphol-Oost. This was probably just as well, as the Brazilian plant declared bankruptcy shortly thereafter.

Israel showed interest in the Nene-powered S.14 as a ground-attack aircraft fitted with underwing hardpoints and a gunpack on the underside of the fuselage. This version would also offer increased internal fuel capacity, provision for two wingtip tanks and a one-piece sliding canopy without framing. In the event, the Israelis opted to acquire the French Fouga Magister, which was used in battle for the same purpose.

The Nene-powered prototype's flying career for Fokker drew to a close on October 22, 1956, the aircraft having completed 636 flights and accrued 381hr 53min of flying time. Although painted in military markings, the prototype had never been incorporated into the KLu inventory, but had instead been used solely by Fokker as a demonstration machine, its official owner being the NIV.

A new lease of life

On October 24, 1960, some four years after its retirement by Fokker, the prototype received Dutch civil registration PH-XIV, and on August 21 the following year it was handed over on a "permanent loan" basis to the *Nationaal Luchtvaartlaboratorium* (NLL — National Aviation Laboratory, to become the *Nationaal Luchten*



Opening yet another chapter in the life of the Machtrainer prototype? Sadly not; now on display at the Aviodrome Museum at Lelystad, the aircraft had its wings mounted and was taken outside in 2009 for a spoof April Fool's Day photographic shoot using the Lelystad-based Fouga Magister's starting equipment. It is now back in its usual display location inside the museum.

WTH PHOTOGRAPHY VIA AUTHOR

Ruimtevaartlaboratorium — NLR — later in 1961) as a calibration test aircraft. A major restoration was undertaken in order to return it to airworthy condition, and Fokker's complete spare-parts inventory for the prototype was handed over to the NLL. The aircraft was used until 1966 when it was replaced by a former KLu Hawker Hunter T.7 two-seater.

The prototype's original long noseprobe had long since been removed and the resulting opening was faired over. The aircraft was used relatively little by the NLL/NLR, accruing only 47hr 41min flying time over 60 flights during its five-tear tenure with the organisation. All flights were made by NLR and former Fokker pilot J.F. Douwes Dekker. After its retirement the aircraft was donated to the Aviodome museum at Schiphol Airport. The museum closed in the late 1990s, and K-1 was moved in 2003 to the new Aviodrome Museum at Lelystad Airport, where it remains on display today.

The other two remaining Machtrainer survivors are both production examples: L-11, which was comprehensively restored to static condition and is currently on display in the *Militaire Luchtvaart Museum* (MLM) at Soesterberg; and L-17, which is stored in poor condition at Gilze-Rijen for future restoration. It is extremely unlikely that either will ever fly again.

The batch of 20 Machtrainers produced for the KLu represents the only military order the type ever received. It is interesting to note that in Fokker's Annual Report of 1955, reference is made to the company's frustration at the indecision of Nato partners to make a decision about the Machtrainer, and that in the following year's report no mention of the S.14 is made at all. By 1956 Fokker's board of directors had made the decision to terminate the whole Machtrainer project, despite ongoing interest from a number of nations. The board was well-known for being heavily influenced by the Dutch government, so this loss of interest in the S.14 programme may have had a political aspect.

What is without doubt is that on completion of the KLu order all Machtrainer jigs and tooling were removed from the production line and scrapped. With the USA offering excellent terms for T-33s under the conditions of the MAP to most of Fokker's potential customers, the Machtrainer appeared to be an expensive luxury — right aircraft, wrong time.

NICO BRAAS is the co-author, with Willem Vredeling, of the definitive history of the Fokker S.14 Machtrainer, written in Dutch and English and published by Geromy B.V., ISBN 978-908049-815-0. For full details of the book visit the Geromy website at www.geromybv.nl

LOCAL HERO

1st Lt ROYCE C. STEPHENS & THE FIRST DISTINGUISHED FLYING CROSS OF THE BERLIN AIRLIFT

Douglas C-54 Skymaster serial 45-527, wearing fin number "440", is loaded at Wiesbaden before another supply flight to Berlin in 1949. This particular aircraft would go on to have a remarkably long career, serving with the USAF until 1970, when it was delivered to the Colombian Air Force, with which it continued to serve until 1998 — some 50 years after its involvement in the Berlin Airlift.

NATIONAL MUSEUM OF THE USAF

March 4, 1949 — the height of the Soviet blockade of Berlin; one of dozens of routine Douglas C-54 supply flights leaves its base at Wiesbaden for the besieged German citadel. Within 30min the big transport is aflame and diving directly towards a small village. **ANDREAS METZMACHER** pays tribute to the supremely heroic actions of its pilot, 1st Lt Royce C. Stephens (**ABOVE**)

BY MARCH 1949 droves of piston-engined American transport aircraft flying in the direction of Berlin had become a regular sight for the inhabitants of the small Thuringian village of Heroldishausen, located directly beneath the route of the aircraft corridor used by the Americans to bring supplies to the population of West Berlin.

The afternoon of Friday March 4, 1949, was similar to that of the day before and the day before that, with intense activity at the former Luftwaffe base at Wiesbaden, where take-offs and landings by USAF transport aircraft plying their routes to and from Berlin were going on constantly. Douglas C-54E-5-DO serial 44-9086, wearing fin number "442" of the 60th Troop Carrier Group, was being prepared for its second flight of the

ALPHA ARCHIVE

LEFT ***A USAF crew studies a map showing Berlin, then besieged by the Soviets, in the circle at the apex of the triangle formed by the air corridors in and out of the Western zones. The blockade of Berlin began in June 1948, with supply flights starting within days.***

BELOW ***A USAF C-54 lifts off from a West German base on a supply flight to Berlin. The Skymaster was capable of carrying three times as much cargo as its older brother, the C-47, and proved invaluable during the Berlin Airlift.***

day. The crew of the aircraft comprised pilot 1st Lt Royce C. Stephens, copilot 1st Lt Donald Keating and flight engineer Sgt John L. Hanlon.

WARNING SIGNS

Earlier, before the Skymaster's first flight to Berlin and back that morning, Hanlon had detected an oil leak in No 3 engine. The leak was only small, however, and was therefore not considered a reason to ground the transport. When Hanlon checked the aircraft again before the afternoon flight to Berlin, he discovered that only 100 US gal of the 300 US gal of fuel in auxiliary tank No 4 had been used up. He checked the oil leak again, but found little change, and reported the aircraft to be airworthy. The Skymaster was loaded with nearly 11 tons of oats and soap, and was declared ready for another flight.

Shortly before take-off Stephens announced that the crew would be joined by two passengers who needed a lift to Berlin: William A. Kinzalow and William J. Sakkinen, two USAF air traffic controllers who had a spent few days on leave in Wiesbaden and now needed to return to active duty in Berlin. Both had originally been scheduled to fly in another aircraft, which had become unserviceable. Two extra parachutes were taken aboard for the new passengers, and the aircraft taxied to its take-off point.

At 1558hr the aircraft took off, climbed to its cruising altitude of 5,000ft (1,500m) and headed for Berlin. After 24min, with the aircraft just having passed north of Fulda, copilot Keating remarked that the tank indicator for the No 3 engine was showing zero fuel. Flight engineer Hanlon had just enough time to switch to the main fuel tank before the fire-warning light for the No 3 engine lit up. Stephens pulled the No 3 firewall shut-off valve, while Hanlon disconnected the fuel-supply indicator; but it was too late — the engine was on fire.

Attempts to extinguish the fire by Stephens and Hanlon were to no avail. Keating kept the Skymaster on course, observing that the fire was

NATIONAL MUSEUM OF THE USAF

NATIONAL MUSEUM OF THE USAF

ABOVE ***The C-54 provided the backbone of operations for the USAF during the Berlin Airlift, most being operated by the Troop Carrier Groups of Tactical Air Command.*** **BELOW** ***A very low-quality but extremely rare photograph of C-54E 44-9086 (c/n 27312), fin number "442", at Wiesbaden a matter of weeks before its final fatal flight to Berlin on March 4, 1949.***

spreading, and finally gave the order to distribute the parachutes. Stephens put on his parachute and took control of the aircraft. The raging fire quickly spread, leaving Stephens barely able to hold the aircraft in the air.

Dramatic scenes were also unfolding in the Skymaster's cabin. To his horror, one of the passengers realised that his parachute did not fit. Without further ado, Keating took off his parachute and exchanged it for that of the passenger. Hanlon also experienced difficulties donning his parachute, but managed to put it on after a brief struggle. Throwing another last glance into the cockpit he noted that Stephens had just turned on the autopilot. Hanlon then jettisoned the forward freight hatch and directed the two passengers through it, before exiting the aircraft himself.

In the belief that Stephens was directly behind him, Keating jumped head-first through the empty hatch. Stephens, however, had returned to the cockpit. Apparently the cabin door had hit the tail unit as it flew off, affecting the aircraft's attitude. The Skymaster lurched to the left — with the result that it was now pointing directly at the village of Heroldishausen.

THE ULTIMATE SACRIFICE

From a field below, 22-year-old local Werner Reichenbach watched the flightpath of the by-now uncontrollable machine. Almost the entire starboard wing of the aircraft was in flames. As the Skymaster steadily lost height a group of dots fell from the stricken aircraft. Seconds later four parachutes blossomed.

The heaving Skymaster continued its erratic path over Heroldishausen before piling into a

WERNER REICHENBACH

DENNIS GIANGRECO VIA AUTHOR

ABOVE ***Flight engineer John Hanlon receives medical attention at a Berlin hospital for the minor injuries he sustained jumping from the stricken Skymaster a few days earlier. His three fellow survivors look on. From left: passenger William Sakkinen; unknown doctor; Hanlon; passenger William Kinzalow and copilot Donald Keating.***

field oustide the village of Grossengottern in a crimson bloom of fire and thick black smoke. Many eyewitnesses, including Reichenbach, were convinced that the pilot had succeeded in steering the aircraft away from the nearby villages. In doing so, however, he had forfeited his last chance to save his own life. Stephens's four comrades descended in their parachutes and landed nearby. Reichenbach still clearly remembers one of the airmen, shivering in his elegant dress-uniform and brown shoes, running towards him.

The villagers brought the four Americans to Heroldishausen's town hall, where Soviet soldiers, those of the occupying power, soon arrived. Soviet troops were also sent to cordon off a wide area around the location of the crash and guards were posted. The Americans were driven to nearby Bad Langensalza where they were accommodated for a few days in a hotel.

Three American officers were sent to Thuringia in order to arrange the return of the five airmen, and after brief negotiations were able to leave for Berlin with the four survivors. On the way to Berlin the car's fan-belt snapped, causing an unplanned delay. While the vehicle was being repaired the Americans managed to get caught up in a carnival celebration at a local bar, to which they had retired to get a drink.

At the Berlin border crossing a few days later, the Russians handed over the remains of the dead pilot. The body of 1st Lt Stephens was repatriated to the USA and buried in his hometown of San Antonio, Texas. For his actions, which saved not only the lives of his comrades, 1st Lt Royce C. Stephens was posthumously awarded the Distinguished Flying Cross. He was the first Berlin Airlift pilot to receive this high commendation for bravery. He was only 27 years of age.

REMEMBERING A HERO

Despite flurries of snow settling on the hard Thuringian ground overnight after the crash, the wreckage of the aircraft continued to burn, with members of the volunteer fire service watching over it along with Soviet soldiers.

Some days later, under the surveillance of the Soviet soldiers, the villagers cleared away the scattered wreckage. Except for a few lumps of soft soap there was scarcely anything left to use from the aircraft's cargo. The oats were either burnt or contaminated by leaked oil or fuel. The craters in the field into which the four engines had bored were simply filled in. The event quickly passed into local history.

It was not until after the reunification of Germany that local residents in Grossengottern and Heroldishausen began to become interested in the crash again. Contact with the surviving crew members and the sister of the pilot was established by a local historian.

WERNER REICHENBACH

ABOVE ***Donald Keating at the unveiling of the memorial to 1st Lt Royce C. Stephens near Heroldishausen in the German state of Thuringia, in March 1999. Ten years later the memorial was restored by a group of Boy Scouts led by Zechariah Sparrow, who said that "the local council seemed very pleased and gave us a lot of encouragement".***

In March 1999, on the 50th anniversary of the crash, and with copilot Donald Keating present, a memorial stone was unveiled at the crash site near Heroldishausen. A few months later the Grossengottern Agricultural Machines Club had salvaged one of the Skymaster's four Pratt & Whitney R-2000-25 engines. Beside the destroyed remnants, many small parts were found in the excavation, alongside tools and instruments.

In 2009 a Stuttgart Boy Scout Troop, led by Zechariah Sparrow, son of a US Army European Command officer, travelled the 250 miles (400km) from Stuttgart to restore the memorial. "After reading how 1st Lt Stephens lost his life while trying to keep the aircraft steady so his crew and passengers could jump out, and then seeing the memorial last year and noticing how it lacked life, I thought someone should do something for the pilot's memory", explained Sparrow. "I got seven friends to help me out, and together we cleaned up the area, laid new stones and planted flowers that will bloom year after year around the memorial. It took all day to do, but it was well worth it, and I hope the project will preserve the pilot's memory". Indeed it does.

Translation by ***JOHN MILLOY***

C-54s of Tactical Air Command line up on the taxiway at Frankfurt am Main in July 1949. The blockade of Berlin continued until May 1949, although supply flights continued into the city until the end of that September, by which time the USAF had delivered some 1,783,573 tons of provisions to the city.

BUNDESARCHIV BILD 146-1985-064-10A

THE HOT SEAT

THE AERCAB PROJECT

"TO INCREASE AIRCREWS' CHANCES OF SAFE RESCUE IN COMBAT ZONES, THE ARMED FORCES ARE INVESTIGATING ADVANCED ESCAPE AND RESCUE CONCEPTS THAT WILL PROVIDE INDEPENDENT FLIGHT AFTER EJECTION AND THUS REDUCE THE RISK OF CAPTURE . . ."
— KAMAN AIRCRAFT CORP DOCUMENT, 1972

With losses mounting in the escalating conflict in South-east Asia in the late 1960s, the USAF and US Navy set about finding ways to reduce the number of American pilots being captured after "punching out" over Vietcong-held territory. Enter the AERCAB project — a radical plan to develop a jet-powered "flyaway" ejection-seat, as **NICK STROUD** explains

BY LATE 1967 it was becoming an increasingly common story in the skies over Vietnam. With rockets streaking away towards an unseen target in the dense jungle a few hundred feet below, the pilot of the American state-of-the-art ground-attack jet hears a sickening "thunk", quickly followed by the instrument panel lighting up like a Christmas tree. With the fuel pressure dropping like a stone and smoke billowing from the tailpipe, a decision has to be made — and fast. Can he get to the coast? Unlikely. Can he put the shrieking hunk of metal down in one piece? Impossible. Only one option remains.

Notifying his flight leader that he is "punching out", the pilot initiates the ejection sequence. In the blink of an eye, the canopy peels away from the crippled jet and the pilot's seat rockets into the hostile sky. The twisting, tumbling pilot and seat separate, a parachute billows, and the pilot floats slowly down to contemplate his fate in the unfriendly jungle below, in the heart of Vietcong territory. His chances of being picked up by helicopter are good — his chances of falling into enemy hands are better.

What if a system could be devised in which the ejection seat flies on under its own power, even if only to get the pilot away from enemy-dominated areas and nearer to his own lines?

A FLYING EJECTION SEAT?

By the end of the decade both the USAF and the US Navy were concerned enough about losses in Vietnam to authorise a project to explore just such an idea. The programme, based on studies launched in late 1967, was designated AERCAB — **A**ircrew **E**scape/**R**escue **CA**pa**B**ility. The idea was to provide the ejectee with independent, controllable flight capability in order to leave heavily defended enemy territory, while giving a rescue team additional time to locate the downed airman, who would have considerably more choice over where he landed. In the case of a naval aviator flying over water, he could direct his AERCAB towards his home carrier, or at least fly some distance towards outbound rescue craft.

A 1974 report by the USAF's Flight Dynamics Laboratory at Wright-Patterson AFB in Ohio described the central idea thus:

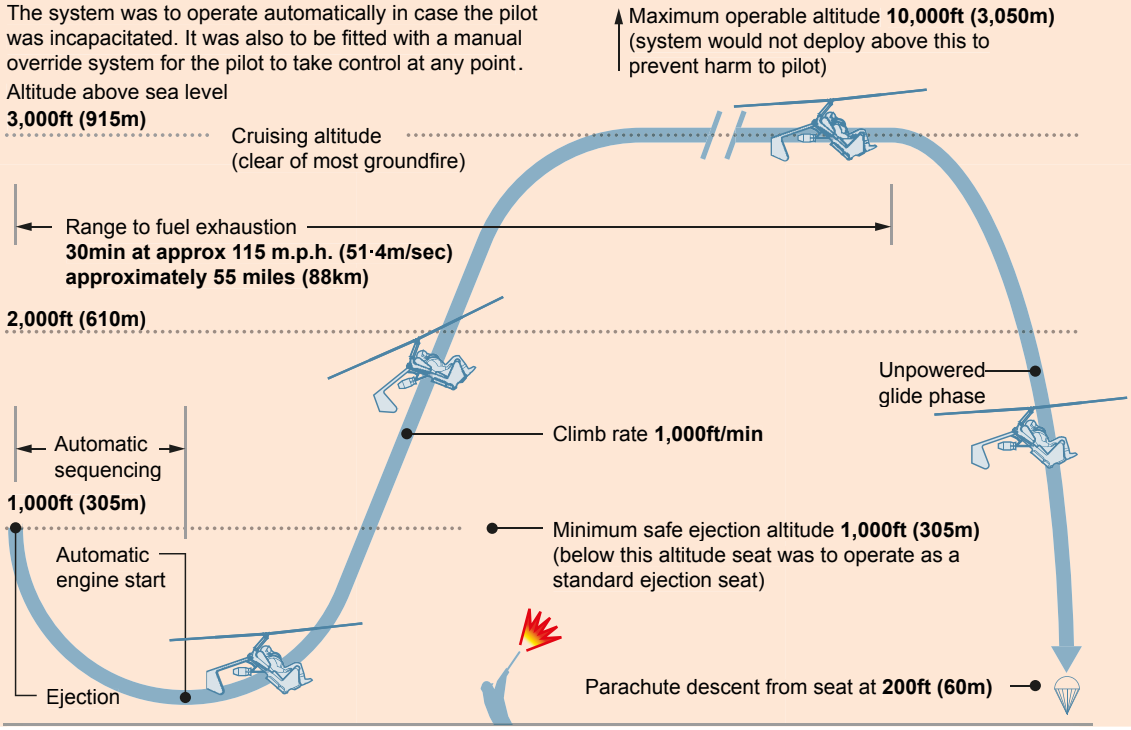
"The 'flyaway' escape concept provides the aircrewman with a secondary flight vehicle capable of obtaining or maintaining altitude, and permits him to assist in his own rescue by navigating over a limited range and at a specified cruise speed out of a hostile area towards predetermined 'safe' sites, where he can be rescued with the least jeopardy to all personnel involved."

Furthermore, with some degree of hubris, the report declared AERCAB to be "a new dimension in airborne escape. It represents the next-generation escape system by providing

ILLUSTRATION ***The Kaman SAVER turbofan-powered autogyro was one of three projects developed for the American military's AERCAB programme, and was the subject of a typically dynamic illustration by Fred L. Wolff to accompany an article on the concept in the September 1969 issue of*** **Popular Mechanics.**

AERCAB performance requirements

The system was to operate automatically in case the pilot was incapacitated. It was also to be fitted with a manual override system for the pilot to take control at any point.



Graphic: Ian Bott *www.ianbottillustration.co.uk*

an 'aircraft within an aircraft'." But would it — could it — ultimately actually work?

Prospective AERCAB candidates were to be equipped with deployable lifting surfaces and a propulsion system. The primary programme objectives were specified as follows:

- cruise altitude to be just above the range of small-arms fire;
- current escape capabilities/envelopes must not be compromised;
- deployment and conversion must be fully automatic;
- the system must be capable of operation in adverse weather;
- retrofit into Vought A-7 Corsair and McDonnell Douglas F-4 Phantom aircraft is highly desirable.

Three organisations put forward proposals to the AERCAB specification: the Kaman Aircraft Corp of Bloomfield, Connecticut; Fairchild's Stratos Western Group at Manhattan Beach, California, and Bell Aerosystems of Buffalo, New York. Contracts were issued to all three, with Bell under the ægis of the USAF's Flight Dynamics Laboratory and Kaman and Fairchild/Stratos working with the Naval Air Development Center (NADC) at Warminster, Pennsylvania.

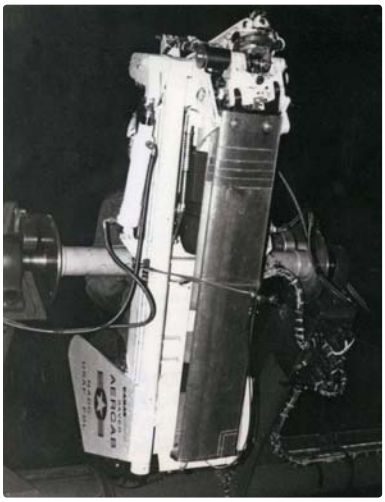
The three companies set to work, each devising different methods of approaching the AERCAB concept. It was a demanding specification, which had to meet several critical requirements. As well as the primary objectives stated above, it was also stipulated that the pilot had to be given the option of reverting to a standard parachute descent if he knew he was over friendly territory. The system was to be fully automatic, but had to have an override that the pilot could use at any time. The automatic system was included to ensure that a wounded or semi-conscious pilot could also use it, with the seat flying a pre-determined heading and altitude. The pilot's separation from the seat and parachute deployment at 200ft (60m) above ground level at the end of 30min of flying were also specified, although in the event at least two of the AERCAB concepts were designed to be capable of taking the pilot all the way to the ground.

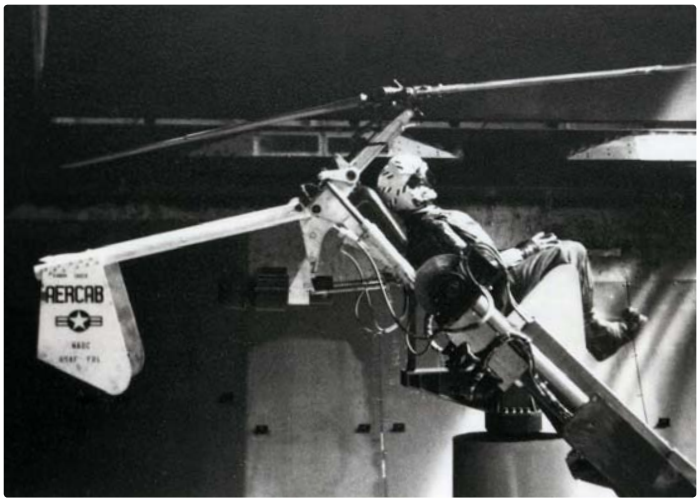
A barometric sensor was to be incorporated, to ensure that the system could not deploy until it was at or below 10,000ft (3,050m), above which the pilot would suffer from exposure and exhaust his oxygen supply too quickly. The seat had to be capable of a speed of at least 100kt, a rate of climb of 1,000ft/min (305m/min) and have a range of approximately 50 miles (80km). Survival equipment, including a locator beacon, was also to be incorporated.

THE KAMAN CONCEPT

Devised by a team led by Richard H. Hollrock and Justin J. Barzda, Research Project Engineer and Chief of Systems Research respectively at Kaman, the SAVER — **S**towable **A**ircrew **V**ehicle **E**scape **R**otoseat — was a compact autogyro

"WHAT IS AERCAB? A SECONDARY FLIGHT VEHICLE CONTAINED IN A PRIMARY FIGHTER AIRCRAFT. WHY WOULD AERCAB BE USED? TO SAVE TRAINING DOLLARS, LIVES AND PREVENT IMPRISONMENT. HOW WOULD AERCAB BE USED? BY REMOVING CREWS FROM A HIGH-THREAT ENVIRONMENT TO A LOW-THREAT ENVIRONMENT." — USAF FLIGHT DYNAMICS LABORATORY REPORT, JULY 1974





ALL PHOTOGRAPHS BY HOWARD LEVY

ABOVE LEFT ***The Kaman SAVER seat in its stowed position at the windtunnel at NASA's Ames Research Center. The rotor blades are coned upwards from the hub mounted on an A-frame, which hinges rearward to store the blades behind the seat.*** **ABOVE RIGHT** ***The deployed SAVER seat during trials in the Ames 40ft x 80ft windtunnel.***

with an unpowered rotor that was intended to be folded and stowed in the cockpit of the A-7 Corsair and F-4 Phantom, and possibly later the Grumman F-14 Tomcat.

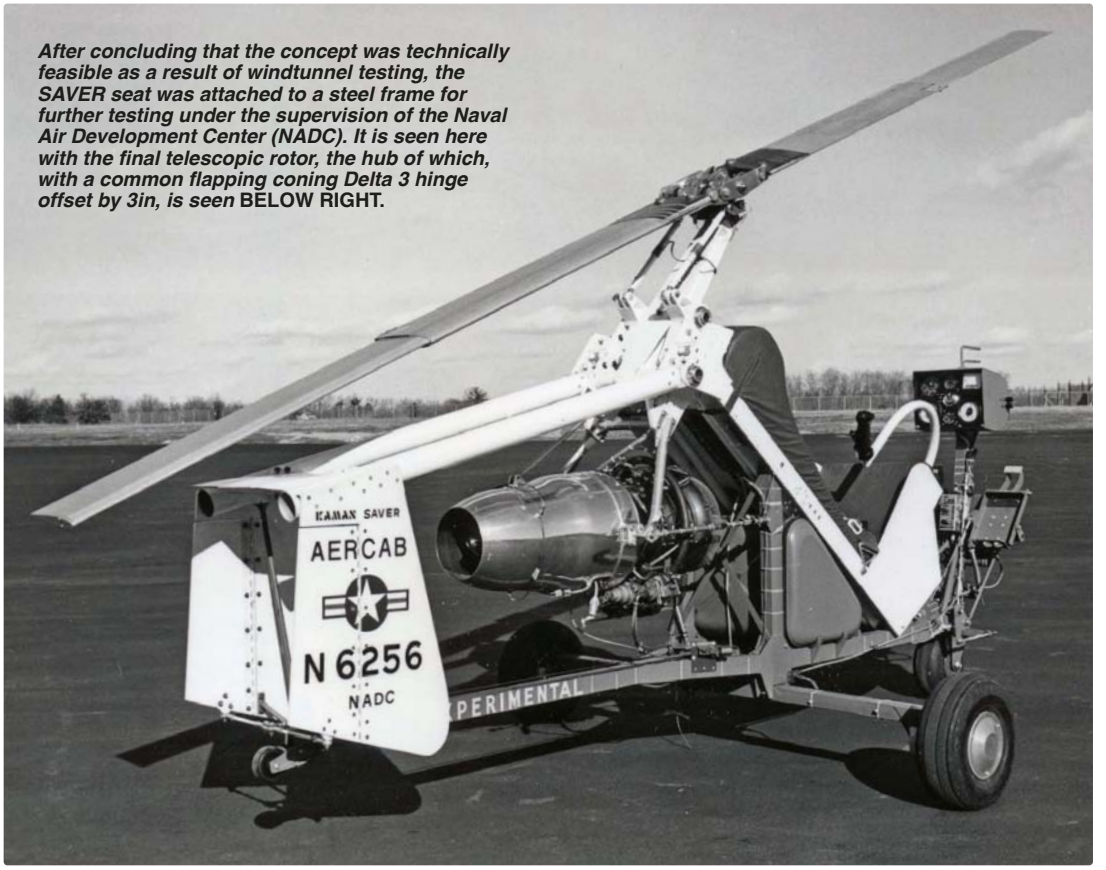
The SAVER's major elements comprised the ejection seat, lift system (rotor), turbofan propulsion unit and associated sub-systems. When stowed the SAVER seat measured 22in W x 38in D x 54in H (0·56m x 0·95m x 1·37m) and weighed 290lb (130kg) empty and around 600lb (270kg) with pilot, powerplant and fuel.

The lift system incorporated a direct-tilt two-bladed rotor with two-section telescoping blades and teetering/zero-offset flapping hinges which allowed the blades to cone, or fold upwards 90° for storage. The rotor blades were epoxy-resin-bonded assemblies of aluminium alloy. Folded blade length was 4ft (1·2m); open but not telescoped 8ft (2·4m) and the rotor diameter at full extension was 14ft (4·25m). Inboard the blade was a NACA 0015 aerofoil of 8in (200mm) chord, with a NACA 0012 aerofoil of 7in (180mm) chord outboard. The nose spar and trailing-edge members of both blade sections overlapped and retained the outboard blade at full extension after deployment.

Providing the thrust for Kaman's "hot seat" was a JP-5-fuelled Williams WR-19 turbofan of 420lb (190kg)-thrust at sea level, nested in the back of the seat, although it was proposed that a more powerful 8in (200mm)-diameter version be developed for production examples. Both engine and rotor blades were stowed behind the seat between the twin ejection catapults and sustainer rockets. The rotor system was attached to the seat structure by an A-frame support mounted at the top of the seat, and the self-sealing anti-explosive inhibited fuel cell was located under the seat pan.

Kaman's aim was to develop a vehicle with a top speed of 115 m.p.h. (185km/h) at 3,000ft (900m), and a 30min endurance with fuel consumption in the range of 0·70lb/hr (0·3kg/hr). The rate of climb was in line with the AERCAB specification at 1,000ft/min and the glide ratio was to be 3:1. A minimum ejection altitude of 1,000ft (300m) had also been stipulated, as had a minimum safe altitude for unpowered vertical descent — autorotation — of 800ft (250m), both of which were met by the Kaman design.

In operation, the pilot would depart the aircraft using the conventional ejection sequence, after which a drogue parachute would deploy once the seat was clear of the aircraft. The drogue would inflate, its lanyard pulling the stowed blades aft and upwards to a trail position, which in train would rotate the seat to a near-horizontal attitude. A hub-latch clamp and tip-restraint cable would then be explosively cut, as a result of which the hub springs would cone the flapping hinges outward to introduce sweep and pitch to the trailing rotor blades in order to initiate spin-up and full extension of the

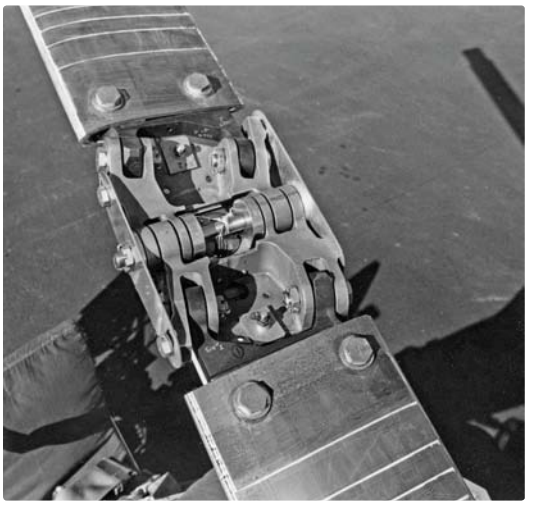


***After concluding that the concept was technically feasible as a result of windtunnel testing, the SAVER seat was attached to a steel frame for further testing under the supervision of the Naval Air Development Center (NADC). It is seen here with the final telescopic rotor, the hub of which, with a common flapping coning Delta 3 hinge offset by 3in, is seen* BELOW RIGHT.**

blades. The rotor had a cone-governed speed — so, should the rotor overspeed, the blades would cone at a lesser angle. The differential in coning between blade and flapping hinge produced an increase in blade pitch which reduced the rotor speed. If the rotor speed fell below normal, blade-pitch would be decreased and the rotor speed increased.

Once the initial deployment stage was complete, the parachute and lanyard would be jettisoned and the coning restraint on the flapping hinge would also be severed, allowing the rotor to speed up and cone at its lesser-angle flight equilibrium position. At this point the rotor speed would then come under the control of the automatic flight-control system. With the seat descending almost vertically, the stowed engine, twin-boom tail surfaces and rotor would transition to their flight positions before the turbofan kicked into action. The ejection seat was now a powered autogyro.

After the SAVER's fuel was exhausted, the pilot would automatically separate from the seat and descend to earth via parachute. The entire sequence was automatic, the pilot having only to pull the face-curtain firing control to initiate the ejection. Instead of taking pot luck as to where he landed in the hostile territory below, he could now put himself beyond immediate reach of

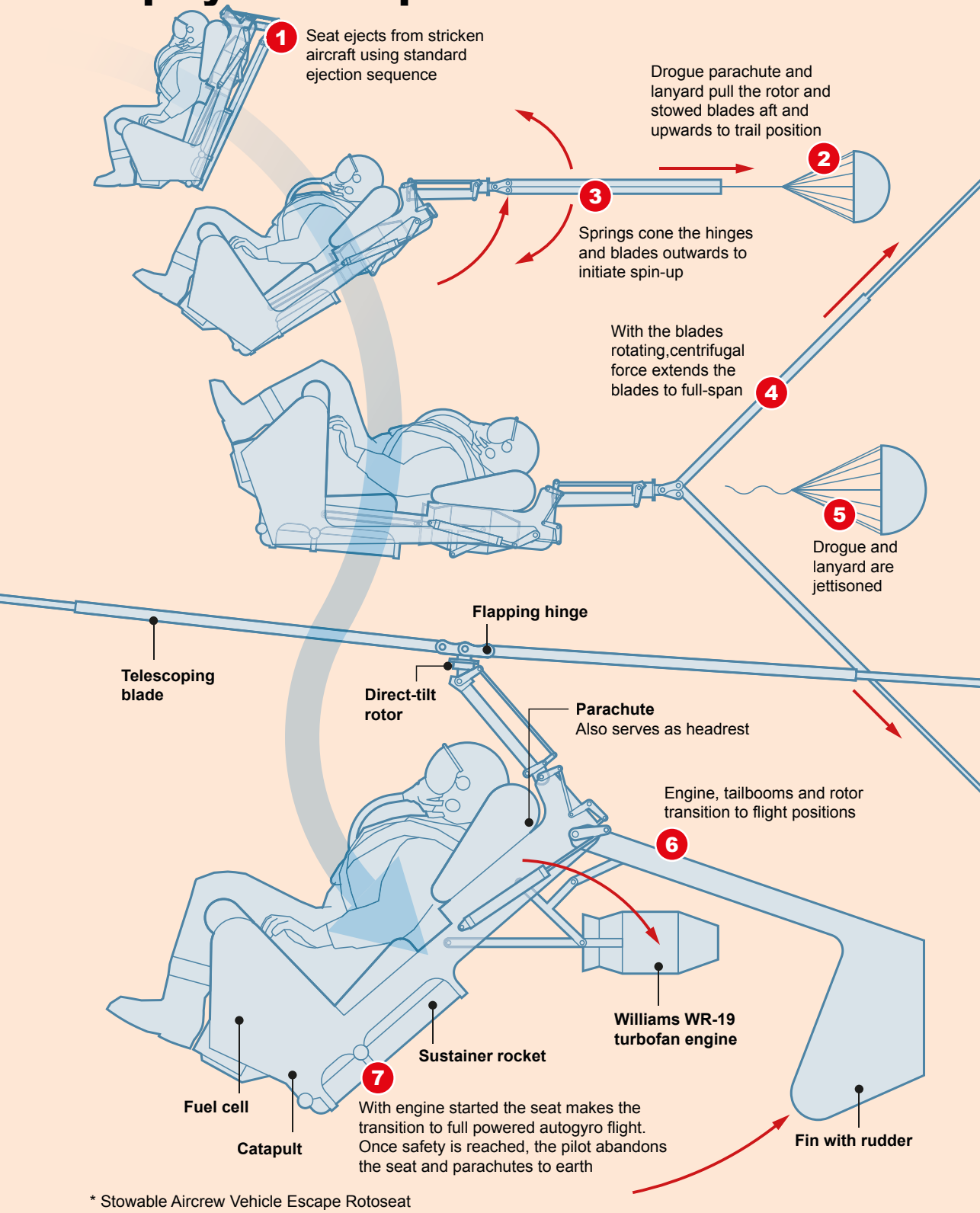


his potential captors and find an advantageous location for his extraction by rescue helicopter, or even possibly find his way back to his own lines.

SAVER TRIALS

Testing of the SAVER system to demonstrate technical feasibility was undertaken in the 40ft x 80ft (12m x 24m) windtunnel at NASA's Ames Research Center at Moffett Field, California, in

Deployment sequence: Kaman SAVER*



* Stowable Aircrew Vehicle Escape Rotoseat
Graphic: Ian Bott *www.ianbottillustration.co.uk*

ABOVE ***Kaman chief test pilot F. Andrew Foster prepares for tests of the SAVER flight rig. The white portions of the machine, plus the rotor blades and engine, are the seat in its deployed mode. The controls for the test vehicle differed from those of the final proposed version, which was to be fitted with a small side-mounted control stick.***

September 1970. A full-scale SAVER preliminary design model was folded into the stowed configuration and put through its deployment and transition paces.

Successful demonstrations included decelerator-mode rotor operations at speeds up to 93m/sec (208 m.p.h.); rotor extraction, spin-up and operation in seat-wake at 82·5m/sec (185 m.p.h.); conversion from decelerator mode to flight-mode configuration and autogyro-mode operation at up to 56m/sec (125 m.p.h.). During the trials the rotor-lift capability was found to be 700lb (315kg), some 14 per cent higher than called for in the specification.

With the windtunnel trials successfully concluded, the design model was then adapted to become a manned flight-test vehicle with the incorporation of a welded steel frame with tricycle undercarriage, pedals for the oversized rudders (to improve slow-flight control for the trials), propulsion system, manual flight control and instrumentation.

Weighing in at 700lb and sporting a larger 16ft (4·9m)-diameter test rotor for initial trials, the SAVER made its first autogyro flight in the hands of Kaman's chief test pilot, F. Andrew Foster, on December 29, 1971. On January 10, 1972, Foster took the aircraft aloft again with the final 14ft (4·3m)-diameter rotor. With these flights this "boilerplate" test vehicle became the world's first manned turbine-powered autogyro and the first autogyro to fly with telescoping rotor blades. The SAVER test rig flew the length of the 9,000ft (2,740m) runway, becoming airborne at 63 m.p.h. (100km/h), using half of the WR-19 engine's available 420lb-thrust and a rotor r.p.m. of 900.

THE MODEL 616

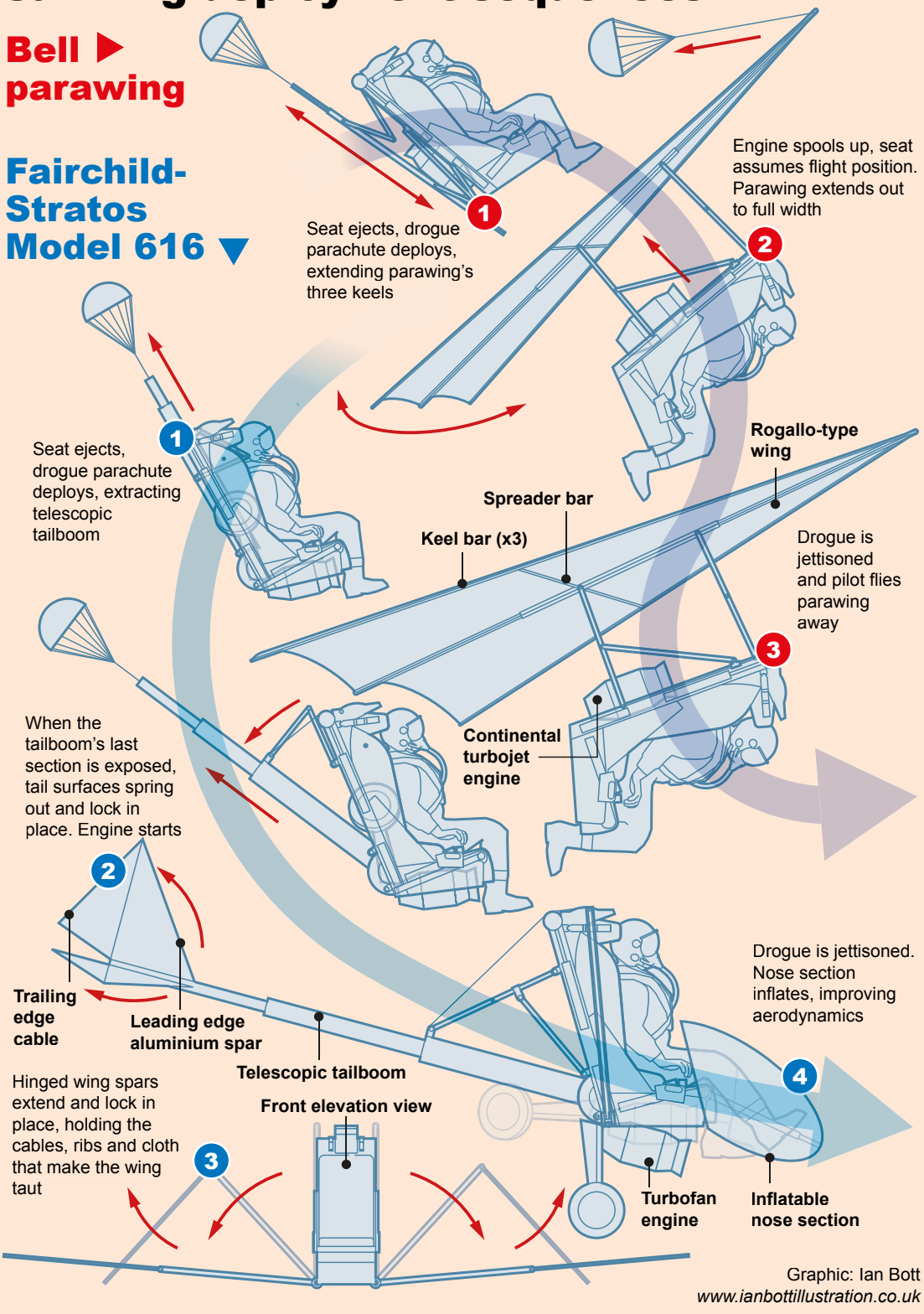
Fairchild's Stratos Western Group, at that time largely a supplier of valves and regulators for space vehicles, turned its attention to a different approach to the AERCAB project. Designated Model 616, Stratos's proposal was for a turbofan-powered sailwing-configured aircraft. (A sail-wing is a surface that assumes a lifting profile only in the presence of sufficient airflow.)

As per the specification, transition from ejection seat to a flying self-rescue vehicle was to be fully automated. Rather than taking the autogyro route, Stratos designed a telescoping tubular fuselage which extended aft by means of a drogue parachute. The last section of the tubular structure incorporated notches that ran its entire length, in which the tail surfaces would be folded and stowed. When the last section was exposed the tail surfaces, under spring tension, would pop out and lock into place.

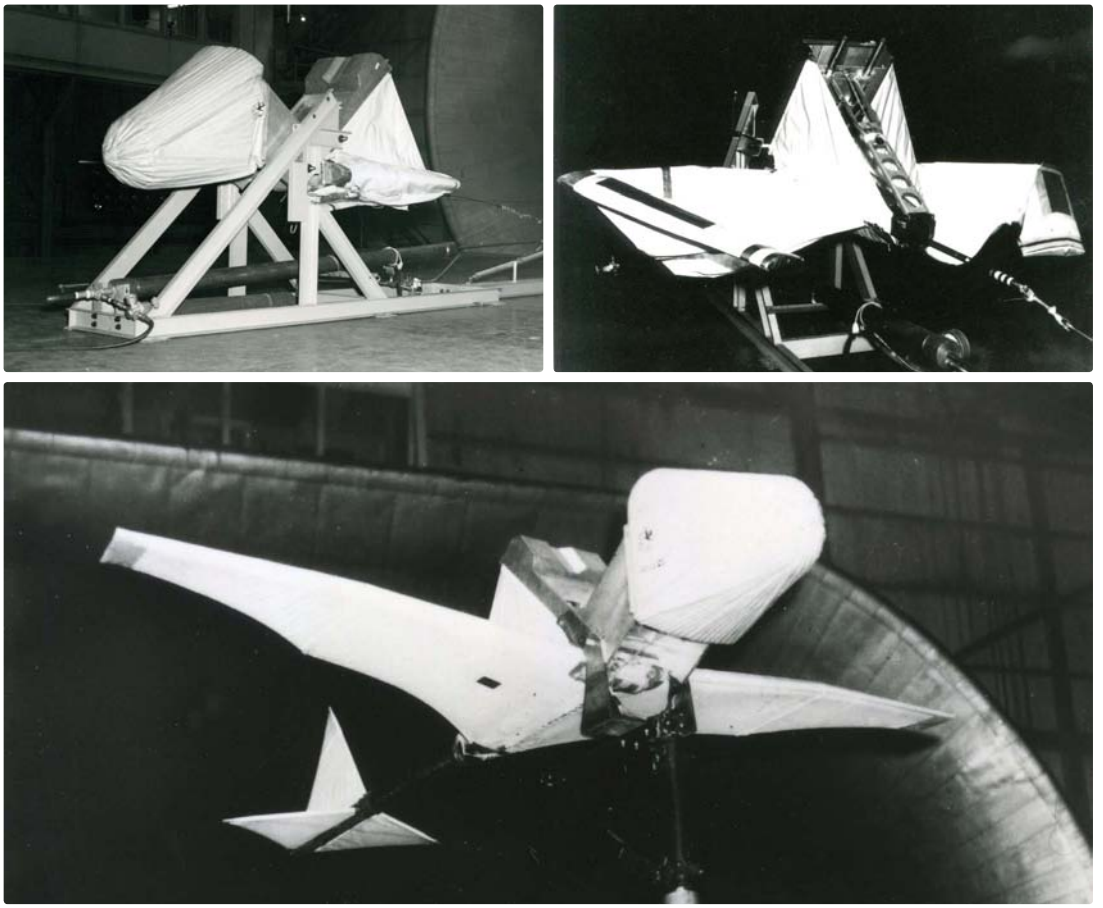
The 16ft-span main wings were hinged at two points; the inboard section of the leading edge, made up of a tubular spar, was hinged to the seat, and the outboard section, nested within the inboard section, swung out further on a hinge at the outer end of the inboard section. Fully extended, the wing would then lock in place and pull taut the cable that made up the trailing edge of the Dacron wing.

The "nose" of the aircraft was an inflatable

Bell parawing and Fairchild-Stratos sailwing deployment sequences:



Graphic: Ian Bott
www.ianbottillustration.co.uk



ABOVE ***Fairchild-Stratos Western's Model 616 — the most literal interpretation of the specification for "an aircraft within an aircraft" — undergoing windtunnel tests at NASA's Langley Research Center. The wing was stowed by folding once at the midpoint of the semispan and hingeing at the wing root to fold against the tailboom assembly.***

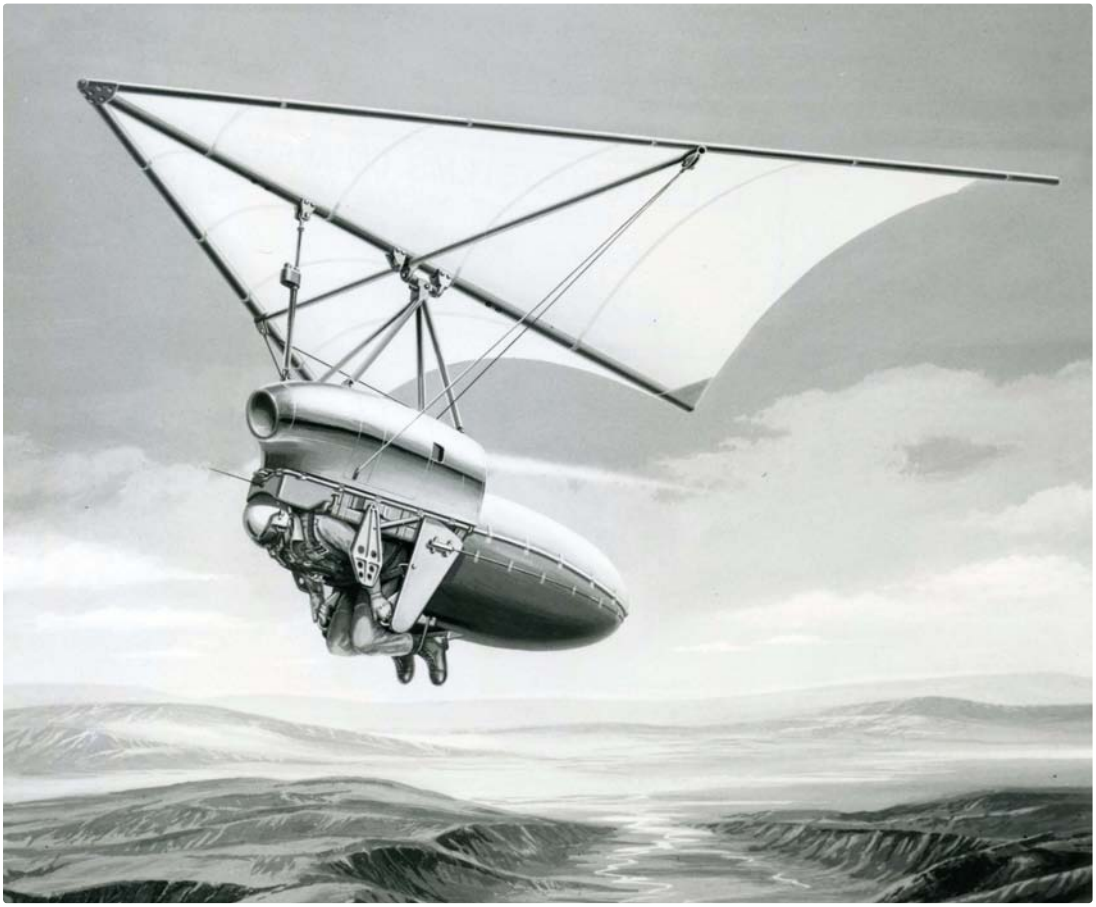
tubular framework, which, when stowed, was positioned behind the pilot's feet and against the front of the ejection seat. Following ejection, this rubberised-cloth nose section would be inflated by compressed air from a tank located in the seat. A control column on the seat floor would manipulate bladders inside the wings, which would be warped for control in pitch and roll. The engine was to be attached to the bottom edge of the seat, and controlled by a throttle on the seat's armrest.

After ejection from a stricken aircraft, the seat would be slowed and stabilised by a drogue parachute, before the transition sequence began at about 170 m.p.h. (275km/h), the full process to flying-seat taking 6–10sec. Although the powerplant to be used appears not to have been specified, it was noted that the Model 616 was capable of an unpowered glide ratio of 8:1. Documents state that the 616's empty weight was 304lb (138kg), with an all-up weight of 600lb (270kg). Its length was 15ft (4·6m), tail span 4ft 2in (1·26m) and it had an overall height of 2ft 6½in (0·78m). Fairchild Stratos began work on the Model 616 in December 1968, running tests on various wing configurations at the NASA windtunnel at the Langley Research Center in Virginia until July 1969, but the concept proceeded no further.

BELL'S ROGALLO CONCEPT

Arguably the simplest of the three AERCAB contenders, Bell's jet-powered parawing design was begun in mid-1969 to a USAF contract. The system comprised a modified ejection seat with a Continental turbofan mounted to the back and kept aloft by means of a rigidised two-lobed Rogallo-style parawing.

Following ejection, a decelerator parachute would deploy, triggering actuators which would initiate the jettisoning of the back of the seat to allow the V-shaped wing to extend to a length of about 7ft (2·1m) and a width at the trailing edge of about 13ft (3·95m). Each of the wing's three keel bars would have two sections, one nesting within the other when stowed. A spreader bar would also extend to maintain the inflation of the Dacron wing.



TAH ARCHIVE

***ABOVE An artist's impression of Bell's parawing AERCAB design in flight. According to Bell, the uncomfortable-looking face-down flight attitude for the pilot was selected as it offered the advantages of reduced system drag and thus less engine thrust. For more on the Rogallo wing see* Ryan and The Triangular Pterodactyls *in* TAH1.**

If Fairchild's Model 616 had provided the familiarity of an upright flying position for the pilot, Bell's parawing was the polar opposite; the pilot, still strapped to the seat, was essentially suspended face down, moving a control stick on an armrest to control the wing above and the engine behind. Quite what USAF pilots may have made of the concept remains unknown.

What is known, however, is that none of the three projects was pursued beyond Kaman's tests with its SAVER airframe during 1971–72. The USAF Flight Dynamics Laboratory's full report on the testing of the AERCAB concept, compiled in July 1974, asserted that "to upgrade the existing designs to meet the established performance goals implies an increase in stowed volume which is already critical on the F-4 and A-7", both of which would require "major cockpit modifications". Furthermore, the report explained, "the existing designs are judged to be marginal with respect to performance achievable versus performance desired".

The Laboratory's final word on AERCAB was somewhat inconclusive, stating the following:

"The AERCAB concept represents a radical departure from conventional ejection, escape and rescue tactics. It is unique in that it provides a means for both escaping from a lethally damaged aircraft and escaping from the particular locale where the ejection took place. This capability is desirable.

"However, the vehicle to accomplish it involves complex engineering, and the implementation of the concept into the inventory requires significant changes to the established methods of performing rescue. Operational trade-offs should be conducted to provide a better evaluation of the advantages and disadvantages of the AERCAB as compared to other approaches".

With the USA's appetite to continue fighting a bloody and unwinnable war in South-east Asia waning and former prisoners of war being returned home, the impetus to invest in what would have been a costly and time-consuming retrofit programme for the aircraft of the USAF and US Navy dried up, and the idea was mothballed — permanently.

ARMCHAIR AVIATION

We take a look at what's available for the aviation history enthusiast in the world of books and other literature, from hot-off-the-press publications to reissued classics

Gustave Whitehead: First in Flight

By Susan Brinchman; Apex Educational Media, PO Box 655, La Mesa, CA 91944, USA; 8in x 10in (203mm x 254mm); softback; 432 pages, illustrated; $24.99 + $5 p&p within USA; ISBN 978-0-69243-930-2

MANY YEARS AGO I spent some time in lengthy correspondence with Maj William O'Dwyer in an effort to obtain straight answers to some rather pertinent questions relating to the claims and assertions he and others had made concerning the alleged powered heavier-than-air flights made by Gustave Whitehead in Connecticut, USA, in the early 1900s. I received long and devious replies in which he consistently failed to address the questions or attempted to evade them. When I showed the correspondence to John W.R. Taylor, then Editor of *Jane's All the World's Aircraft*, he said I was wasting my time and that I should end the exchange. I took his advice.

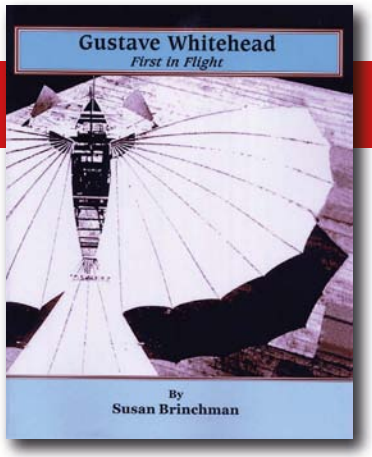
O'Dwyer had produced an outrageous book entitled *History by Contract*, in which he sought to promote Whitehead and denigrate the Wright brothers. It was a rambling, repetitious and confused assemblage of all manner of material, relying heavily on ill-informed press reports and very belated witness testimonies, and full of very questionable "facts" and claims.

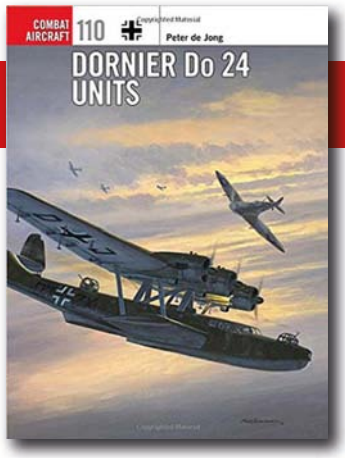
The author of this new book is Susan O'Dwyer Brinchman, the major's daughter (although the middle name is conspicuously absent from the front cover), who has principally used her late father's archive to assemble this volume. She is evidently her father's daughter, for her offering has many similarities with the major's book, being rambling, very repetitive and using the same images repeatedly. It is also full of selective quotes, ill-founded claims and assertions, and all of the same old unreliable material previously employed by promoters of the Whitehead cause. There is little that is "new", and such as there is does not affect the arguments.

An extraordinary amount of space is devoted to belittling the Wrights' achievements. This is really a red herring, and would be totally unnecessary if the Whitehead claims were indisputable, but that is far from the case. Unfortunately, like many before her, Brinchman has accepted without question a spoof article published in the *Bridgeport Sunday Herald* on August 18, 1901, that is riddled with ridiculous and questionable statements, and has also naïvely swallowed Whitehead's plainly outrageous claims for flights of simply unbelievable duration and distance.

Like all of the previous "Whiteheaders", she also assumes that the "blurred photograph of a large birdlike machine propelled by compressed air, and which was constructed by Whitehead in 1901" depicting "a motor-driven aeroplane in successful flight" as described in the *Scientific American* report on the First Annual Show of the Aero Club of America in New York City in 1906, featured a full-size man-carrying aeroplane. This has to be nonsense, as the size and weight of the cylinder needed to hold compressed air in sufficient quantity and at sufficient pressure to enable a manned aeroplane to make a sustained flight would rule out the practicability of such a device. Moreover, as the pressure fell the power would quickly fall below that required to sustain flight. The photo must have depicted a model.

Brinchman puts her faith in rogues such as Albert Zahm, who had a vested interest in discrediting the Wrights (not mentioned, of course), and also in vague and unreliable witness testimonies. She evidently believes that Whitehead was honest, whereas his own claims beggar belief and sound more like the ramblings of a fantasist (or, at worst, a liar), and seems to think that because a story in a newspaper was picked up and syndicated around the world it must be true. She is also fond of referring to the recent débâcle in which an unsuspecting editor of *Jane's* backed claims regarding Whitehead's priority, but steers clear of mentioning that a





"forensically" examined image that formed the initial basis of the claims has been totally discredited. Likewise, she fails to note that the publishers of *Jane's* have since sought to distance themselves from the affair. There seems to be a belief that if you shout something loudly and repeatedly it will become an accepted fact, even if there is no hard evidence to back the claim.

Whitehead was probably an earnest but amateurish experimenter, and his fruitless efforts perhaps merit some small recognition. However, this publication seeks to elevate him far beyond his rightful lowly status in aviation history. Like him, it does not succeed.

PHILIP JARRETT

Dornier Do 24 Units

By Peter de Jong; Osprey Publishing, Midland House, West Way, Botley, Oxford OX2 0PH; 7¼in x 9¾in (186mm x 248mm); softback; 96 pages, illustrated; £13.99. ISBN 978-1-47280-570-6

THE 110th VOLUME in Osprey's highly successful — and recently redesigned — *Combat Aircraft* series is a history of one of the lesser-known aircraft of World War Two, the Dornier Do 24 flying-boat. Every major power fielded at least one important flying-boat during the conflict; the USA had its Consolidated PBY Catalina and Martin PBM Mariner, while Britain's Short Sunderland was certainly an important member of the clan. Japan's Kawanishi H8K *Emily* was considered the best in its class of all the nations and the Soviet Union operated its own fleet of indigenous designs.

Arguably Germany's finest waterborne aircraft, the Do 24 was originally designed to meet a Dutch Navy requirement, and ultimately served in a wide variety of duties during the war — on both sides — and continued operating after the war for a number of years in Sweden and France.

The author had a wide canvas on which to paint his story. The Do 24 was in action from the early German campaigns in northern Europe to the doomed Dutch defence of its East Indies territories against the Japanese onslaught during the first year of the war in the Pacific. This latter campaign — that undertaken in the Netherlands East Indies (NEI) — is arguably the most interesting, pitting as it did the armed forces of two equally desperate countries against each other. Japan needed the oil and resources of the Indies while the lightly-equipped NEI forces were unable to defend themselves properly against such a modern military juggernaut.

Following the NEI campaign, the author moves into more familiar territory, mainly Europe, where the Do 24 was used as a search-and-rescue (SAR) aircraft. Like their Allied counterparts, German crews also had to fight bad weather, heavy seas and enemy fire as they struggled to recover stranded airmen, sometimes even those on the other side.The type's post-war career, surprisingly long in some cases, is also covered in some detail.

The traditional folio of excellent profile artworks by Osprey regular Chris Davey rounds off this excellent account of an important — if often overlooked — German wartime stalwart.

PETER B. MERSKY

Billy Bishop VC, Lone Wolf Hunter: The RAF Ace Re-examined

By Peter Kilduff; Grub Street, 4 Rainham Close, London SW11 6SS; 7in x 10in (170mm x 246mm); hardback; 192 pages, illustrated; £20. ISBN 978-1-909808-13-3

THE AUTHOR COULD hardly have picked a more controversial subject than William Avery Bishop VC, whose claimed 72 victories made him the British Empire's highest-scoring First

World War ace. The trouble is that a high percentage of Bishop's claims were, and remain, unverified as he often flew alone, there were no impartial witnesses and surviving German records contain no matching losses.

The author's diligent research and amassing of facts regarding his subject's wartime career, the units in which he served and their activities, and enemy activity is evident, but he seems to have embarked on a campaign to exonerate Bishop. Unfortunately the evidence to corroborate a high percentage of his victory claims is lacking. Nonetheless, after describing two solo combats on June 4, 1918, for which no confirming German losses have been traced, the author "prefers to give Billy the benefit of the doubt — until it can be conclusively proven that the events did not take place as described". This is perverse logic, demanding that, if it cannot be proved that something did not happen, we should assume it did. As such proof requires negative evidence, this is absolutely wrong-headed. In reality the author is passing the buck, as the onus should be on him to prove an event occurred before it can be accepted without question.

We can play a similar trick on Mr Kilduff. The author states in his foreword that Bishop himself admits to embellishing his post-war accounts of his wartime accomplishments "in ways that conflicted with known facts". So, applying the author's backhanded logic, would it not be equally right to assume that Bishop did the same during the war, until it can be "conclusively proven" that he was telling the truth?

The author twice quotes William L. Shirer's statement "History must speak for itself", but this is patently ridiculous, as history's only mouthpiece, as it were, is the interpretative historian. In this instance the historian appears to be bending over backwards to cast a favourable light on his subject. Although he does clearly state where records are lacking, he sometimes indulges in speculation regarding possible victims. In the victory tally appended at the end of the book the column identifying the supposed victims is absolutely peppered with phrases such as "possibly . . .", "no matching loss found", "German records incomplete" or "German records inexplicable", and this merely heightens the reader's awareness of major problems regarding veracity.

There are plenty of illustrations depicting Allied and German aircraft relevant to the text, but quite a few are murky. Unfortunately the author has chosen a very atypical B.E.2c with an experimental installation of an Hispano-Suiza engine to illustrate the type, and his "Maurice Farman Série 11" is actually a Sopwith Gun Bus, a type not used by the Royal Flying Corps.

PHILIP JARRETT

Sir Geoffrey de Havilland: A Life of Innovation

By J.M. Ramsden; Hylan DS Publishing, 2 Wendover Court, Welwyn, Hertfordshire AL6 9HR; 8½in x 6in (220mm x 150mm); hardback; 238 pages, illustrated; £25 + £5 p&p in UK direct from publisher; also available over the counter at the de Havilland Aircraft Museum, Salisbury Hall. ISBN 978-0-99316-790-4

IF YOU HAVE had the good fortune to meet quite a few former de Havilland pilots, workers and apprentices in your time, you will know that they tend to have a particular bearing and *ésprit de corps* which sets them apart from alumni of other aircraft companies. They all seem to have an unshakeable belief that D.H. was the best firm in the world — which can sometimes leave the rest of us thinking ourselves accurs'd we were not there.

Regardless of whether all D.H. aeroplanes were or were not beyond reproach, this corporate spirit is engendered from the top —

AERO MODELLER

Edited by Andrew Boddington; ADH Publishing Ltd, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire LU6 1QX; 11¾in x 8¼in (297mm x 210mm); softback; 68 pages, illustrated; £5 (or £55 for annual UK print subscription covering 12 issues, inc p&p). ISSN 0001-9232. Website www.aero-modeller.com

FIRST PUBLISHED IN 1935, *Aero Modeller* celebrated its 80th anniversary at the end of last year. Whereas the vast majority of aeromodelling titles concentrate on radio control, this venerable publication focuses on free-flight, control-line and indoor flying, plus just a bit of R/C — but all for the traditional stick-and-tissue (and scratchbuilt foam) modeller.

The anniversary issue (November 2015) includes features on the British Model Flying Association's Power Nationals competitions in August; an historical tribute to the eminent and pioneering aeromodeller Lt-Col C.E. Bowden; control-line team racing; glider wing design and adjustment; engine and electronics reviews; an assessment of modellers' cyanoacrylate adhesives (superglues); a free plan for a rubber-powered indoor duration model, and much more besides.

I must declare an emotional interest here. I probably owe my long career with *Aeroplane Monthly* and now *TAH* to a love of magazines born when, at the tender age of nine-and-a-half, I bought my first-ever mag: April 1970's issue of *Aero Modeller*. After various incarnations, it is still recognisably the same familiar entity, even to the extent that its *Heard at the Hangar Doors* newspages and at least one of its regular contributors are still going strong, 45 years on! **MICK OAKEY**

in this case, Sir Geoffrey de Havilland. As HRH The Duke of Edinburgh (who learned to fly in a Chipmunk, so has a D.H. link of sorts) says in his foreword, "It is about time that a proper biography of Sir Geoffrey de Havilland was published". Indeed it is; the book makes a fine counterpoint to Sir Geoffrey's 1961 auto-biography *Sky Fever,* and to Martin Sharp's 1960 company history *D.H.: A History of de Havilland.* It is, however, a light and generously-illustrated biography, which leaves room for a more substantial and forensic work in the future.

Author Mike Ramsden was a de Havilland Aeronautical Technical School engineering apprentice in 1945–50, and went on to work for the company for five more years, so he is by no means an entirely dispassionate biographer. In 1955, however, he left to join the staff of British weekly aviation magazine *Flight,* and rose with distinction to become its Editor from 1964 to 1981 (and ed-in-chief until 1989); so his journalistic rigour, brevity, and eye for a compelling story make for an enjoyable and illuminating read.

Geoffrey's childhood and influences, and his early career as a designer and pilot with the Royal Aircraft Factory and Airco before and during World War One, are covered in the first three chapters. The story then moves on to Airco's metamorphosis into the de Havilland Aircraft Company in 1920, and Geoffrey's very personal conception of the Moth family of light aeroplanes which were to make him a household name and a fortune. In this, the true core of the book, the reader learns much about Geoffrey's courteous management style and about the wry sense of humour which clearly pervaded the firm. And of course it was not just about aeroplanes: "an engine man from youth", as the author puts it, Geoffrey launched the de Havilland Engine Company and D.H. Propellers, and was an innovative early adopter of jet propulsion.

The portrait of de Havilland the man is further developed from the perspectives of colleagues and friends including his chief engineer C.C. Walker, chairman Alan Butler, chief aerodynamicist Richard Clarkson, and chief designers A.E. Hagg and R.E. Bishop.

The impression created is of a generally happy and productive enterprise, so it is all the more poignant to read about the "shattering sorrows" of Geoffrey's loss of two of his three sons while flying as test pilots, plus the death of his wife Louie, in the space of just six years. Within a few more years, the Comet metal-fatigue tragedies were to add another layer of shadow and, as the author says, "with hindsight we can see how the company never regained the sovereignty which it lost with the Comet 1 accidents".

Soon the great mergers of the 1950s–60s saw the company name fade from the scene, and in 1965 Sir Geoffrey with it — but that subtle "Aaah! de Havilland!" scent lingers still, for all who care to detect it.

Three annexes to the main text begin with an account of the testing of the Comet 1 (fatigue tests in a water-tank were performed three years before the aircraft started carrying passengers, and four years before the RAE built its own tank as part of the accident investigation) and the lessons learnt. There follows a paean of praise to the wondrous wooden architecture of the Mosquito — "the Mosquito structure balances history's disappointment with the Comet 1 fuselage structure", asserts the author. The final annex is "Sir Geoffrey's Inbox", a collection of flight-test reports.

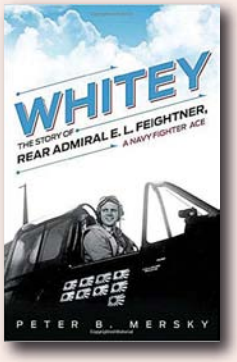
Curiously, in a way this handsome book — with its gold-blocked D.H. blue buckram binding, fabric headband and gold ribbon bookmark — looks and feels like the sort of volume one might get printed as a record and keepsake for members of one's family. Which takes us back to that close-knit *ésprit de corps* with which this review began.

MICK OAKEY

BOOKS IN BRIEF

A quick round-up of what else is currently available for the aviation history enthusiast

WHITEY: The Story of Rear Admiral E.L. Feightner, A Navy Fighter Ace
Peter B. Mersky
Naval Institute Press; ISBN 978-1-61251-791-9; £27.95

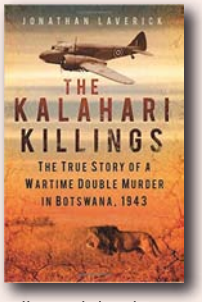


THIS HIGHLY readable 224-page hardback from US Navy specialist and *TAH* contributor Peter B. Mersky details the long and illustrious flying career of Edward L. "Whitey" Feightner, Pacific War ace, 1950s test pilot and ultimately US Navy grandee. The author, personally acquainted with the book's subject, provides an in-depth and enjoyable account of an extraordinary life in American naval aviation. Of particular note are the aviator's frequent hair-raising encounters with Vought's woeful F7U Cutlass. **NS**

SPITFIRES IN THE SUN
A History of the Supermarine Spitfire in Indian Air Force Service 1944–1957
Vikram Singh
Ambi Knowledge Resources Pvt Ltd; ISBN 978-8-19035-915-3; RRP £39.99 + £5 p&p (within UK)

THE SPITFIRE is a subject that has been covered to the point of utter tedium, so it is indeed a welcome tome that sheds new light on R.J. Mitchell's magnificent fighter. This is such a tome, dealing with the type's career in the Indian Air Force, including its role in Indian service in Burma, the 100 examples left behind by the RAF after the war, and the dispositions of the diverse variants operated by the Indians until September 1957. There is limited availability, so get one while you can; visit www.aviation-bookshop.com **NS**

THE KALAHARI KILLINGS
Jonathan Laverick
The History Press; ISBN 978-0-75095-665-9; RRP £12.99

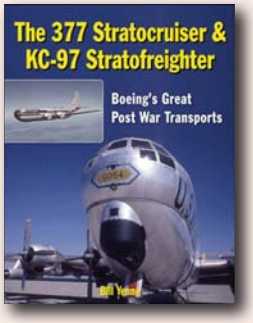


THIS ABSORBING paperback traces the true story of the murder of a pair of RAF pilots who had to put down in their Airspeed Oxford during a training reconnaissance flight in Botswana in October 1943. Providing much information about the little-covered subject of wartime pilot training in Africa and using official documentation of the ensuing trial of local bushmen, the author gets to the bottom of a compelling — if at times grisly — true tale. **NS**

SWISSAIR AERIAL PHOTOGRAPHS
Ruedi Weidmann
Scheidegger & Spiess/ University of Chicago Press; ISBN 978-3-85881-429-6; RRP £45.50

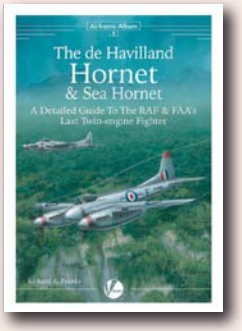
ALTHOUGH NOT a book about aviation as such, this immaculately-produced 192-page 8in x 10½in (205mm x 265mm) hardback has an unavoidable connection with the subject by dint of being a collection of beautiful aerial photographs taken by the Swissair Photo AG subsidiary, some dating back as far back as 1918, when the airline's forerunner, Ad Astra Aero AG, was founded. These stunning oblique and vertical images of Alpine landscapes and villages are a feast for the eyes, even if very few aeroplanes are included. **NS**

THE 377 STRATOCRUISER & KC-97 STRATOFREIGHTER
Boeing's Great Post War Transports
Bill Yenne
Crécy Publishing Ltd (www.crecy.co.uk); ISBN 978-0-85979-179-3; RRP £23.95



LOVED IN EQUAL measure by civil and military aviation enthusiasts as a highpoint of mid-20th Century piston power, Boeing's Model 377 Stratocruiser and its military counterpart, the KC-97 Stratofreighter, are given the full Crécy treatment by Bill Yenne, long regarded as one of America's most authoritative aviation specialists. Printed on high-quality paper that will last, this handsome A4 hardback looks set to become the definitive history of the Seattle giant's distinctive "double-bubble" transport. **NS**

AIRFRAME ALBUM
No 8: THE DE HAVILLAND HORNET & SEA HORNET
Richard A. Franks
Valiant Wings Publishing; ISBN 978-0-95758-668-0; £16.95



WHO CAN FAIL to be captivated by the D.H.103, surely the ultimate twin-piston-engined fighter? This latest addition to Valiant Wings' series of guides follows the well-established and very satisfactory pattern (enlarged this time with 12 extra pages): lots of detail photographs, diagrams from manuals, profiles, camouflage-and-markings notes, and a terrific section of graphics on the evolution of the type. **MO**

Lost & Found

PHILIP JARRETT explores the lesser-known corners of aviation history, discovering unknown images and rediscovering long-lost details of aircraft, people and events. Here he looks at an illustration of an unbuilt Handley Page design for a transatlantic flight

LEFT ***Pilot Rowland Ding with the L/200's forebear, the Handley Page Type G, at The Stray, Harrogate, in July 1914, where he took up 78 passengers — although not all at once, it must be added!***

PHILIP JARRETT COLLECTION

BELOW ***An impression of the Handley Page L/200 by artist Ralph Pointer GAvA. No period drawings or photographs of the proposed transatlantic machine appear to have survived.***

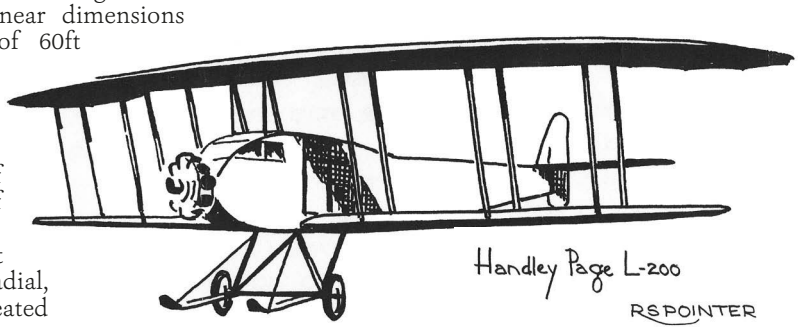
IN 1914 THE *Daily Mail* newspaper put up a £10,000 prize for the first direct non-stop transatlantic flight, and several British manufacturers began to build aeroplanes designed for the task. One such company was Handley Page, which produced a biplane designated L/200.

This machine was directly descended from the Handley Page Type G, or G/100, a crescent-winged two-seat biplane powered by a 100 h.p. Anzani ten-cylinder air-cooled radial engine, first flown on November 6, 1913, by Ronald Whitehouse and subsequently flown with great success by him and Rowland Ding. One of Ding's passengers in 1914 was Princess Ludwig of Löwenstein-Wertheim, formerly Lady Ann Savile, a well-known sportswoman who became a keen aviation enthusiast.

Construction of a ¾-scale successor to the Type G, the single-seat K/35 with a 35 h.p. Anzani, was postponed and then abandoned in favour of the L/200, which was similar in configuration to the K/35 but with the linear dimensions doubled, giving it a span of 60ft (18·3m) and a wing area of 900ft² (83·6m²). Built to the order of Princess Ludwig, it had a streamlined fuselage, housing tanks for 350gal of fuel, 35gal of oil and 35gal of water. Power was to be provided by a 200 h.p. Salmson-built Canton-Unné water-cooled radial, and the two occupants were seated side-by-side with dual controls in an enclosed cabin which included a third seat for use as a rest station. Ding was to pilot the L/200 on the transatlantic attempt, with the Princess acting as copilot.

The L/200 was virtually complete but unassembled and awaiting its engine when war broke out. However, when the engine arrived from France it was requisitioned by the Admiralty, and the L/200 was never assembled and flown. Attempts to sell it to the Admiralty as a coastal patrol landplane or seaplane in various forms came to naught.

Unfortunately no manufacturer's drawings nor photographs of the L/200 have ever been found. The basic speculative impression of its likely appearance reproduced here was drawn some years ago for the Handley Page Association by Ralph Pointer GAvA. It seems that this is all we have to give us some idea of the lines of this large and ambitious machine.



Pierre's MAGICAL MYSTERY "Bristol" TOURER

In the summer of 1920 a number of Bristol F.2Bs, modified as passenger-carriers and known as Tourers, were exported from the UK to America. What they did next has long been something of a mystery, but with the help of some vintage images **MICHAEL O'LEARY** pieces together what happened to at least one of them

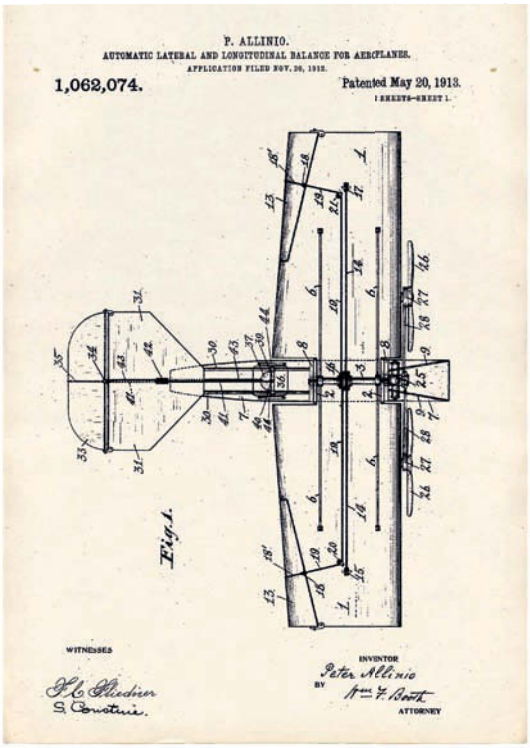
PHILIP JARRETT COLLECTION

ABOVE ***The first of the three-seat Coupé Tourers, c/n 5891, was photographed at Filton in August 1920, shortly before being despatched to New York. It is thought that nine Tourers, some open-cockpit and some coupé, were sent to the USA, but there is little information on what happened to them once there.***

IN THE EARLY 1900s Pierre "Peter" Allinio, an Italian immigrant in the USA, was living in El Cerrito, in the San Francisco Bay area of California, working as an artisan plasterer. Allinio was an early and avid aviation enthusiast, having had some experience with Caproni back in Italy, and soon began reading everything he could find on the subject. In 1908 he began building his own aircraft designs at his home at 609 Kearney Street, reportedly flying them from fields along Stockton Street and Fairmount Avenue. Whether these were scale models or full-size aircraft capable of carrying passengers is unknown, although at least one source states that he completed his first full-size aircraft, a Curtiss Pusher, in 1912.

On May 20, 1913, Allinio was granted US Patent No 1,062,074 (as seen at **RIGHT**), in which he detailed "a class of aeroplanes in which pendulous swaying structures, by their tendency to maintain their equilibrium, are made the motive for automatic control or balance". This system of automatic stabilisation applied to both lateral and longitudinal balance, "the former being due to the movement of the ailerons by the pendulous action of the freely suspended car, and the latter being effected by the fore-and-aft swinging movement of the seat acting on the elevator plane of the horizontal tailplane".

Allinio's system was incorporated into a two-seat biplane he built and flew — apparently successfully — in 1916, having reportedly built a seaplane in 1914, presumably with


P. ALLINIO.
AUTOMATIC LATERAL AND LONGITUDINAL BALANCE FOR AEROPLANES.
APPLICATION FILED NOV. 20, 1912.
1,062,074. Patented May 20, 1913.
2 SHEETS-SHEET 1.
Fig. 1.
WITNESSES
INVENTOR
Peter Allinio
BY
ATTORNEY

OPPOSITE PAGE, TOP ***Pierre Allinio's heavily modified Bristol Tourer fuelling up with Shell at Dexter's, a classic American one-pump gas station, presumably in California.*** **OPPOSITE PAGE, BOTTOM** ***A superb photograph of the Tourer on a vacant lot in Oakland circa 1928, showing its enclosed cockpit and cabin and Allinio's arrow logo.***

The Bristol Seely, named after the first Under-Secretary of State for Air, Gen J.E.B. Seely, was a derivative of the Tourer with an enclosed cabin and redesigned tail, powered by the same Siddeley Puma engine. Only one was built, G-EAUE, for a 1920 civil aeroplane competition, which was ultimately won by the higher-powered Westland Limousine. TAH ARCHIVE

conventional controls. Unfortunately for Allinio, gyroscopic autopilot systems obviated the need for the Italian inventor's pendulum method; and, although he built a five-seat biplane incorporating the system in 1922, the idea was a dead end.

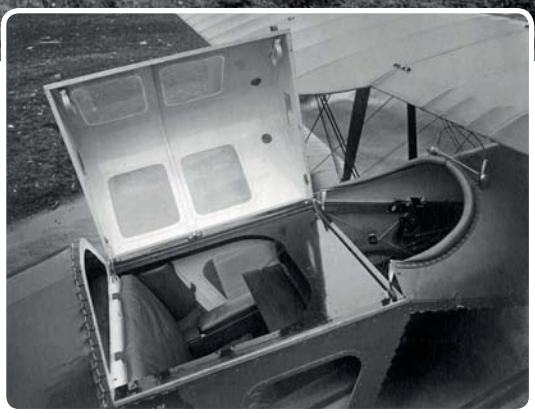
THE BRISTOL TOURER

Undeterred, Allinio continued to work in aviation, reportedly earning a living at one point as a qualified instructor with the Sunset School of Aviation in Alameda, also near San Francisco. There was a flat lot near Allinio's house in El Cerrito which became his airport and was soon home to several other aircraft.

With the end of the Great War, Pierre forged ahead, drawing up plans for an airliner that would carry 100 passengers. He also noted the flood of ex-military aircraft becoming available on the growing civilian aircraft market in the wake of the recent conflict, the British Bristol F.2B Fighter in particular drawing his attention. One of the better combat aircraft of the last part of the First World War, the type saw very limited production in the USA and surplus RAF examples were also imported into the USA.

After the war, Bristol came up with a modification of the "Brisfit" that came to be known as the "Tourer", essentially an F.2B from the production line modified to incorporate a wider rear cockpit for three passengers either in the open or with a coupé top.

Sensing an American market for the Tourer, Bristol's New York agent imported a total of nine examples, including two with interchangeable float/wheeled undercarriages. Sales were not particularly brisk, and information on where



PHILIP JARRETT COLLECTION

ABOVE ***The open hinged cover of the first Bristol Coupé, H1460, on which the Tourer would be based. The "lid" provided a useful reduction in drag, giving the Coupé a maximum speed of 128 m.p.h. (205km/h). Although the Coupé was a two-seater, the Tourer's rear cockpit would be enlarged to carry two passengers, in an open or enclosed configuration.***

they went and who they were operated by is scant. It appears that two examples found their way to Tulsa, Oklahoma, where they were operated by the Curtiss Southwest Airplane Co, along with the sole Bristol M.1 monoplane exported to the USA.

In 1923 former barnstormer and test pilot Billy Parker acquired one of the Tourers and set about revising the rear cockpit, reportedly capable of accommodating four passengers, and incorporating a new enclosure, more in line with, but presumably somewhat larger than, that of the Bristol Seely, a one-off two-seat development of the Tourer in which the passenger was accommodated in a single comfortable cabin behind and below the pilot's open cockpit.

By 1930 Parker's Tourer had been given the civil restricted registration R826Y and had been

LEFT ***An extremely rare — and possibly unique — hand-coloured postcard of the Tourer, probably pictured at the lot near Allinio's home in El Cerrito, California. Whether the aircraft was indeed green with yellow flying surfaces and gold engine is unknown, as is whether one of the gentlemen standing beside the machine is Allinio himself.***

■ ***If any readers can add anything to the story of the Bristol Tourers in the USA, please feel free to contact the Editor!***

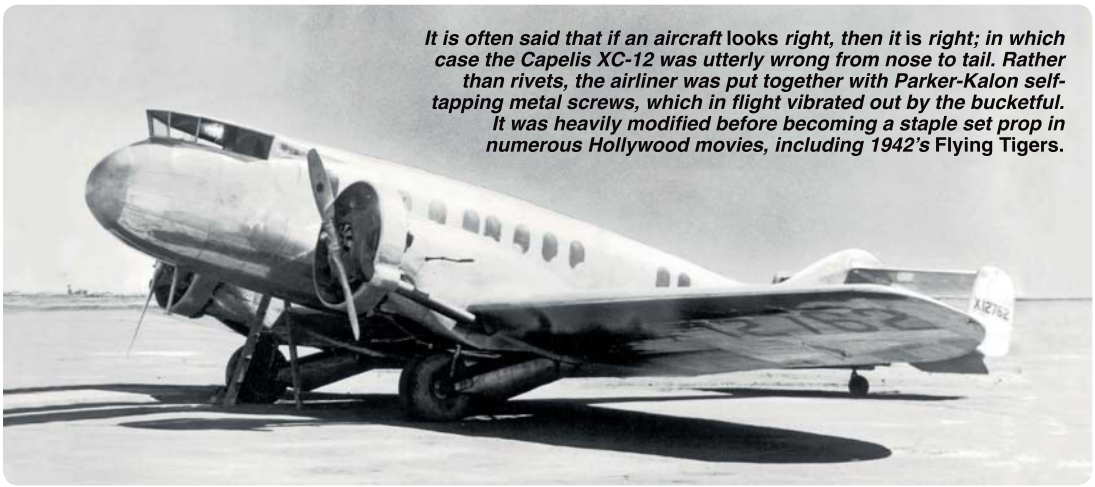
acquired by Pierre Allinio in El Cerrito. When compared to those of a standard Bristol Tourer, the accompanying photographs of the machine while in Allinio's hands show numerous differences between the two. The cabin on Allinio's machine is much larger and the pilot is completely enclosed. Although we know that the aircraft was substantially altered by Allinio after its acquisition from Parker, we do not know to what extent.

THE CALIFORNIA YEARS

The aircraft bears the logo for Allinio Aircraft on the side of the fuselage and appears to have retained its 230 h.p. Siddeley Puma engine. One source states that when the aircraft was fitted with the totally enclosed cabin, it was capable of carrying five people, although this seems unlikely. Little is known about its time with Allinio, although one contemporary magazine article notes that Allinio flew it from Oakland to Los Angeles, which may explain its presence at Glendale in December 1930, when it was involved in an attempt to establish a new endurance record sponsored by the Gilmore Oil Co, for which it was fitted with primitive in-flight refuelling equipment beneath the fuselage.

The aircraft was subsequently sold to film company RKO, which deliberately crashed it for a film sequence.

And what of Pierre Allinio? He would go on to join forces with Socrates Capelis of the Capelis Safety Airplane Co Ltd, also of El Cerrito, to help design and build the disastrous XC-12 airliner. The trail of Allinio's aviation career then goes cold, but it seems that he died in 1943.



***It is often said that if an aircraft* looks *right, then it* is *right; in which case the Capelis XC-12 was utterly wrong from nose to tail. Rather than rivets, the airliner was put together with Parker-Kalon self-tapping metal screws, which in flight vibrated out by the bucketful. It was heavily modified before becoming a staple set prop in numerous Hollywood movies, including 1942's* Flying Tigers.

VIA AUTHOR x 2

Every home should have one — Lockheed F-104J Starfighter 46-8594 (c/n 3094) sits atop a house in Osazawa village in Yamanashi Prefecture. Attempts were made to contact the owner of the house, but sadly there was no reply. Perhaps the owner is a former JASDF pilot?

AUTHOR'S PHOTOGRAPHS

OFF THE BEATEN TRACK

Ever turned a corner to find something unexpected? The Aviation Historian's *intrepid aeronautical explorer* ***PETER DAVISON*** *investigates the stories behind the oddities that turn up in the most unusual places*

THE LOCKHEED F-104 Starfighter needs little introduction as the West's mainstay interceptor of the 1960s–70s, particularly in Europe, where it gained something of a reputation for losses. In Japan, however, where it was christened *"Eiko"* — "Glory" — the 230 serving Starfighters were, and seemingly still are, celebrated as a great success. No fewer than 55 survive as monuments or museum pieces, only 15 per cent being lost in accidents. So far I have found 40 of these while "StarTracking".

This example, serial 46-8594, resides on a domestic roof in Yamanashi Prefecture about 25 miles (40km) from Mount Fuji. Osazawa village lies in a remote green valley in which roads become too narrow to navigate. The property appears to be custom-built with supporting pillars; a Starfighter airframe weighs in at around two tons (2,030kg) without engine.

This Starfighter served with the 204th *Hikotai* at Tsuiki on the southern home island of Kyushu. Seven Japan Air Self Defence Force (JASDF) squadrons operated the F-104J and -DJ variants, with two serving for 20 years before retirement in 1984. Some 178 single-seat F-104Js were built by Mitsubushi with General Electric J79 engines from Ishikawajima-Harima, and 20 F-104DJ two-seat trainers were assembled from kits supplied by Lockheed.

Surprisingly few Starfighters survive in Europe and North America; many were sold on to other nations and subsequently scrapped.

BELOW ***Two F-104s are located at a café near Hamamatsu Air Park in Shizuoka Prefecture, despite the café having apparently closed; they are just visible in the background here. To get a bird's-eye view of the Yamanashi F-104 on Google Earth, enter the co-ordinates 35.440677, 138.415961 in the "Search" panel.***

vickers V.1000 / the wartime soviet connection / berlin airlift skymaster crash / the black phantoms of VX-4 / from tokyo to rome in 1931 / cody and roe / fokker machtrainer / AERCAB flying ejection seats / bristol tourer in the USA